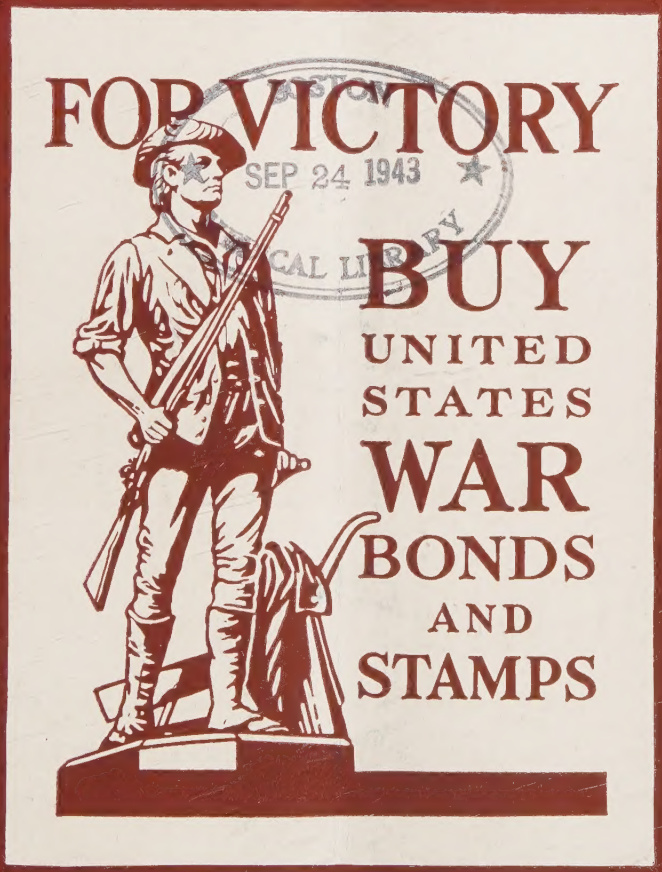
MEDICAL RECORD



SEP 24 1943

August 1943

Vol. 156, No. 8

A Potion of Willow...

Many peoples, ancient and modern, have ascribed contraceptive powers to the willow, a fruitless tree. According to symbolic magic, tea made of willow seeds, bark, leaves or blossoms, would render a woman sterile.*

● In this enlightened age, physicians prescribe materials that have been compounded scientifically. For example, Ortho-Gynol is a highly developed formula made according to very definite specifications and its production is rigidly controlled. Chemical as well as physical properties are carefully studied in vitro and in vivo. The widespread endorsement of Ortho-Gynol by physicians can be attributed only to its effectiveness.

*Himes, *Medical History of Contraception*

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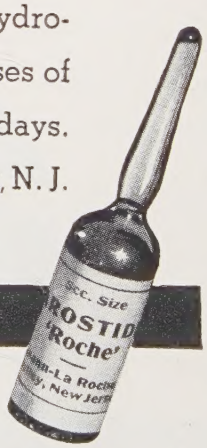
Now, more than ever before, when jobs are so vitally important to our production efforts, it is imperative to keep absenteeism at a minimum. Ulcer patients who might otherwise be put on bed-rest, may now be kept "on the job" with the Larostidin treatment. Larostidin 'Roche' affords a simple, economical method of obtaining relief. The usual restrictions are reduced so that normal activity may be maintained by the patient throughout the period of treatment. Larostidin (*l*-histidine monohydrochloride 'Roche,' 4% isotonic solution) is given in daily doses of 5 cc (1 ampul) by intramuscular injection for a period of 24 days. Supplied in boxes of 6 ampuls. HOFFMANN-LA ROCHE, INC., NUTLEY, N. J.



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AUGUST 1943

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Excellence in War Production

FOR developing and producing Sterile Shaker Packages of Crystalline Sulfanilamide especially designed to meet military needs, for supplying Mercurochrome and other drugs, diagnostic solutions and testing equipment required by the Armed Forces, and for completing deliveries ahead of contract schedule—these are the reasons for the Army-Navy "E" Award to our organization.

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Open Forum

Medical Notes from Mexico City

To the Editor:

Upon returning from my trip to the Yucatán Peninsula and across the southeastern part of this country, in the jungle wilderness of Tabasco and Chiapas States, in Mexico City I met Dr. Fortunato I. Macias, who is a specialist in basal metabolism and biological chemistry. I was greatly surprised at the technique used by Dr. Macias in his work. At present he is studying a new theory which he has evolved on the physical origin of pneumonia within the realm of basal metabolism. I believe this is a study of great importance and true scientific value, and I am sure it will become well known in the near future.

Dr. Macias is a physician, fifty-six years of age, and is chief of the laboratories and basal metabolism department of the Hospital Juarez (State Emergency Hospital of Mexico City), and also a member of the staff of the Sanatorio Español, a private institution that has about two hundred in-patients, and six hundred out-patients who come to the clinic daily. He is also physician to another government hospital of this city and does a great deal of research work in his spare time. Taking into consideration his important and responsible position, he is indeed a kind and modest person.

I believe that the work of Dr. Macias is already well known in institutions in the United States that specialize in research, but it would be very convenient for him to have connection with magazines of a scientific nature, such as the one you publish, so that he would be in a position to know of the outstanding work done by prominent physicians in your country, that I so much love and admire, and also that they should know him better.

For this reason I have pleasure in introducing to you, Dr. Fortunato I. Macias, from Mexico City, and I hope this will afford an opportunity to create a reciprocal friendship such as you have had with other doctors in this Spanish Republic who believe in sincere Pan-Americanism.

I should greatly appreciate it if you would keep the records of Dr. Macias, sending his name and address to the editorial departments of medical book publishers, so that they may send him regularly bibliographical notes on all that is published relative to his specialty. Also, I should be delighted if he could receive your magazine regularly, so I am sending you a check for one year's subscription, which you will please send to his home address in Mexico City. I thank you for your courtesy.

During the eighteen months that I remained in that far away and unhealthy region of Yucatán and the Southeast, I made an anthropological study of aboriginal groups that live there, very deep in the jungles of the Quintana Roo territory. I found many cases of beriberi and pellegra, and among other groups living in other regions of the same territory, different cases of ichthyosis and leprosy, especially of the maculosa type.

I have observed frequently among the native women of Yucatán State, even in the highly cultured city of Mérida, a special type of alopecia that not only attacks the scalp but also the pubes and the axillæ.

In reality, and in spite of the statistical information given to me by the medicosanitary authorities there, I could not determine exactly the etiology of these diseases. Being of parasitic origin, climatic influences might be one of the direct causes, but lately I have placed great importance on dietary factors and bad nutrition that could be easily observed in these decadent aboriginal groups. I studied different groups, classifying them as A, B, and C types, feeding them regularly, exactly as white, civilized persons, and fortified them with injections of different vitamins. I found a noticeable improvement in six out of ten cases that I studied.

I have photographs, anthropometric measures and a general record of all these patients, some of which were previously observed by the eminent Dr. Sttegerda of the Carnegie Institute. I remember a blind boy, thirteen years old, from Dzitás, Yucatán, and different cases from the Mayan village of Pisté, near Chichen Itzá, where Dr. Sttegerda is well known and beloved.

I am still working on the problem, and as soon as I have finished, it will be a great pleasure for me to send to your publication a study dealing with the most peculiar cases I have observed.

I should appreciate it very much if you would be so kind as to send me bibliography and the latest publications relative to dermatology, syphilology, and nutrition. I would thank you very much for this service.

I expect to stay in Mexico City a couple of months more, just waiting for good weather so as to go to the far Lacandon river, a vast territory in which lives in disseminated and scattered form the nomad Lacandones race that, biologically, is rapidly disappearing.

I should highly appreciate any courtesies that you extend to Dr. Macias to whom I am indebted personally for many kindnesses.

I hope to hear from you again.

Dr. Esperanza R. del Casal Estapé

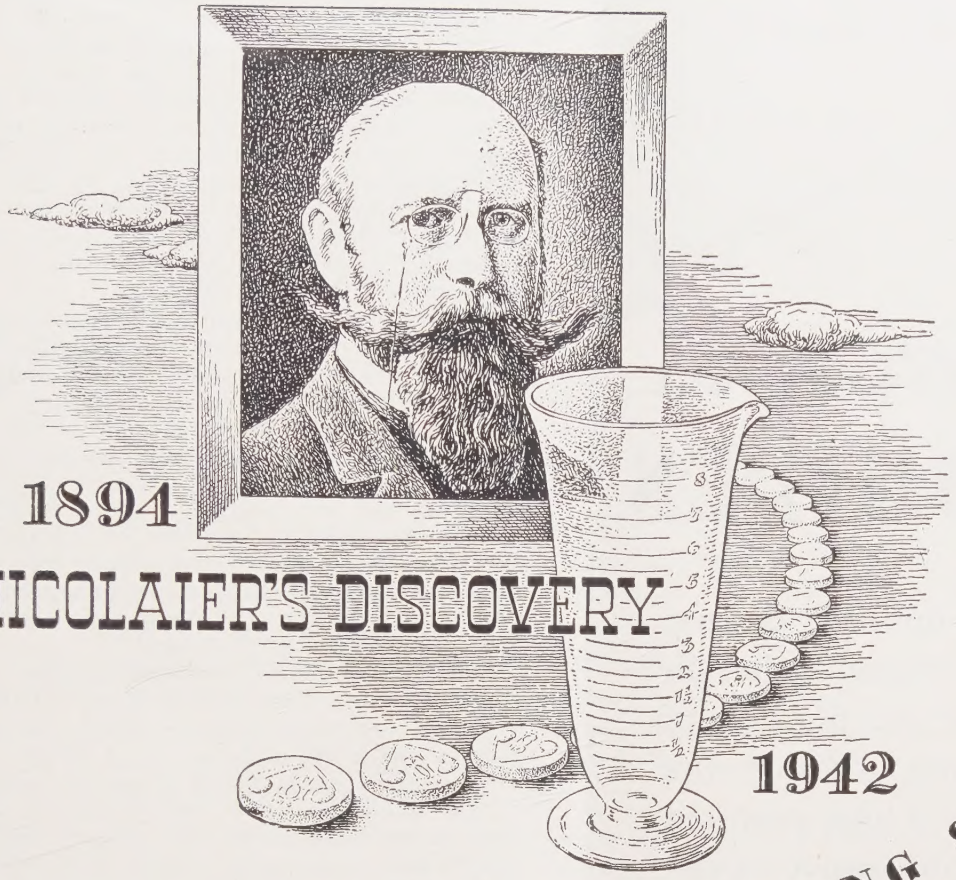
P.S.—Dr. Manuel Ramos, from Campeche, Mexico, spoke to me very kindly about your magazine. I met Dr. Ramos in Paris several years ago, when he was taking a postgraduate course at the Mme. Curie Institute, and to my surprise I met him again in that far away city where he has an important clinic. He is specializing in radiology and cancerology. E. R. E.

Medical Practice in Soviet Russia

The administration of the Soviet medical services is based on Article 120 of the Soviet Constitution, which enacts that all citizens of the U.S.S.R. have the right to free medical services, and to maintenance in the event of sickness, old age or loss of capacity to work. Free medical services and a state-paid insurance which covers the worker from the day he reports sick to the day he returns to work or is awarded a pension—in either case insuring him from two-thirds to the full amount of his average wages—play an important part in the drive for early diagnosis and preventive medicine.

The State Medical Services provide similar security for members of the medical profession, as we see from the report of Dr. Joan McMichael in the *Post-Graduate*

(*Continued on page* 456)



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Medical Journal, London. Before graduation every student discusses his choice of career with the University authorities and according to his choice and the standard he achieves, and after the necessary hospital or other experience is immediately absorbed into academic medicine or research specialization, or general practice in an urban or rural area. The State offers certain inducements to doctors to take up work in rural areas. These may include a free house, a free car, longer holidays or full pay (up to six weeks in the year), and compulsory postgraduate courses on full pay with all expenses met, every three years.

Doctors, whether in town or country, normally work as a team, and receive their salaries from the State for a working day of five or six hours, which enables them to devote additional time to reading or research. Where there is still a marked shortage of doctors they may work one and a half "days", or even two, and draw the appropriate salary, a practice which has become less and less common. A doctor's standard of living is reasonably good while he is working, and when he retires, as he is entitled to do, he also draws a pension amounting to between two-thirds and the full amount of his salary. The age of retirement is fifty-five for women and sixty for men.

A doctor's consulting room and equipment are also provided by the State. In each district of the towns and cities, in many of the larger factories, in groups of villages, and in the State and larger collective farms, doctors have their consulting rooms in a polyclinic—a local health center with every facility for diagnosis and out-patient treatment. The patient's medical record is filed and kept up to date in the polyclinic, and if the patient is transferred to hospital, accompanies him thither. Where a case is of particular interest, or where there is any divergence of opinion, consultations between polyclinic and hospital doctors are arranged. As there are a number of doctors attached to each polyclinic the patient is able to exercise his choice, although in general each polyclinic doctor has his own district, and visits his patients at home if they are unable to attend the polyclinic.

The basic units of "public health protection" are the health protection stations in the factories, workshops, mines, State and collective farms, and so on. The primary function of these stations is to ensure good living and working conditions, and a consequent reduction in the incidence of sickness and industrial accidents. Workers who need more skilled or specialized treatment are referred by the health protection stations to a polyclinic or hospital. From the polyclinics patients are transferred direct to general or specialized hospitals as required.

The People's Commissariat for Health of the U.S.S.R. directs preventive work and supervises all measures aimed at the improvement of the medical services. It exercises jurisdiction over certain medical institutions, such as educational and scientific research institutes, health resorts, and enterprises engaged in the manufacture of medical instruments, equipment and drugs, which are of importance to the whole Union. All other medical institutions—health protection stations, polyclinics, hospitals, dispensaries, etc.—are under the joint jurisdiction of the Local Soviets and of the People's Commissariat for Health of the various Republics.

Unprecedented times?

Unprecedented problems

TODAY, more women are contributing to our national war effort than ever before. The unprecedented responsibility placed on them for full-time activity, intensifies many of their personal problems to an equally unprecedented degree . . . particularly that of menstrual hygiene.

Working steadily with men in near proximity—often wearing close-fitting slacks or coveralls—with less opportunity for private retirement than in more leisurely or more domestic times—it is little wonder that so many have found in Tampax the ideal means for improving their hygienic habits, as an aid to uninterrupted activity.

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Burns and Wound Infections in Air Raid Casualties

The Medical Division of the Office of Civilian Defense has revised its pamphlet, "Treatment of Burns and Prevention of Wound Infections", to incorporate new techniques that have been developed within the past year. The recommendations in this pamphlet are based on recent directions of the Committee on Chemotherapeutic and Other Agents and the Subcommittee on Burns of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Originally drawn up by these committees for the armed forces, the recommendations have been modified to adapt them to the treatment of civilian casualties.

Recommendations for the use of sulfonamides are accompanied by the observation that these drugs must be used more cautiously in the treatment of civilian wounds than is necessary in the care of military casualties, for the following reasons: "The injured may include individuals of all ages and with various types or pre-existing disease, instead of a selected group of healthy young males. The possibility of toxic effects is therefore greatly enhanced. Moreover, it is assumed that in civilian injuries, hospitalization will be possible in a relatively short time, whereas in military operations such is not always the case. This usually makes it possible to postpone all consideration of chemotherapy until the injured have been hospitalized. It is then possible to administer sulfonamides with better safeguards and to consider such contraindications as other pathological conditions or known sensitivity to individual drugs. The dangers of dehydration can also be better prevented or overcome under such circumstances."

In a discussion of intraabdominal wounds leading to perforation of the hollow viscera, the revised pamphlet advises sodium sulfadiazine as the drug of choice for parenteral administration, which is considered preferable to oral therapy during the first forty-eight hours. Sulfanilamide was recommended in the previous edition. Concentrated solutions of sodium sulfadiazine are not recommended for subcutaneous or intramuscular routes, but it is pointed out that weak solutions (five tenths percent) may be used with little danger of sloughing of the tissues.

Special emphasis is placed on the danger of giving sulfonamide drugs to a patient not voiding normally.

The emergency care of burns is outlined as follows: "Whenever casualties with extensive burns can be admitted to hospitals without delay, and definite treatment can be instituted promptly, morphine sulphate, one-half grain, should be administered at the scene of the incident and no local therapy applied to the burned area except sterile gauze to exposed surfaces to prevent infection."

The most notable change in the OCD pamphlet is the withdrawal of the recommendation of the use of ointments or jellies containing tannic acid in the first-aid treatment of burns. The new advice give is that when definitive care cannot be carried out within two hours, the patient should receive sufficient morphine to relieve pain and the burned surfaces should be covered with sterile boric acid ointment or petrolatum over

(Continued on page 460)

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TRIKETOL is a distinct laboratory achievement representing years of original research in bile derivative chemistry. This research culminated in the production, by *proper oxidation,* of crystalline-pure, therapeutic bile acids, free from toxic, irritating contaminants inherent in crude bile. New formulations plus new equipment, of original design, contribute greatly to the exclusive ENDO method of producing TRIKETOL.

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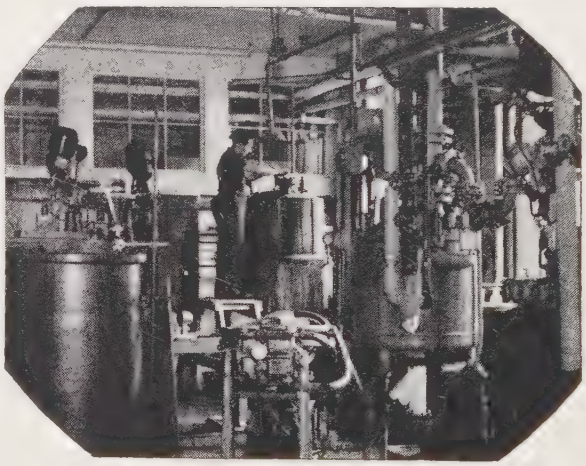

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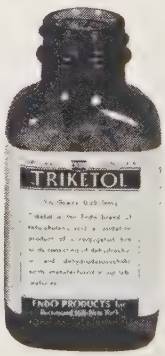

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As civilian food supplies dwindle because of the increased requirements of our armed forces and allies, the spectre of widespread malnutrition looms more vividly. Yet the nutritional state of our population must be maintained at a high level because of its effect upon morale, resistance to disease, and productivity.

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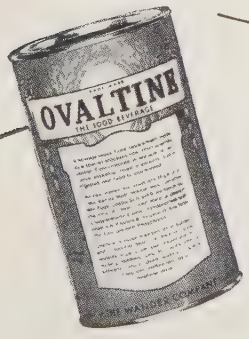

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CALCIUM	0.25 Gm.	1.05 Gm.
PHOSPHORUS	0.25 Gm.	0.903 Gm.
IRON	10.5 mg.	11.9 mg.

	Dry Ovaltine	Ovaltine with milk*
COPPER	0.5 mg.	0.5 mg.
VITAMIN A	1500 U.S.P.U.	2953 U.S.P.U.
VITAMIN D	405 U.S.P.U.	432 U.S.P.U.
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*Each serving made with 8 oz. milk; based on average reported values for milk.

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which one or two layers of gauze of fine mesh (44) is to be smoothly applied. Over this dressing thick sterile gauze or sterile cotton waste is to be placed and the entire dressing is to be bandaged firmly but not tightly. Substitution of jelly containing five percent sulfathiazole in water-soluble base, which is supplied in the OCD carrying case A for mobile medical teams, is permissible.

The discussion of definitive treatment of burns has been expanded to stress the necessity for the administration of large amounts of plasma.

The pamphlet describes "open" and "closed" treatment for burns. The "open" treatment which is now considered the treatment of choice and is especially recommended for treatment of burns of the hands, face, feet, perineum and genitalia, consists essentially of the application of boric acid ointment or petrolatum, with pressure dressings. Such dressings can often be left in place twelve or fourteen days.

The "closed" treatment, which is the tanning or eschar method, is particularly indicated in extensive "flash" or second-degree burns of the trunk. This method is recommended only if the following conditions are present: 1, if not more than twenty-four hours have elapsed; 2, if the burned area has not been grossly contaminated; 3, if strict surgical asepsis is employed in the preparation of the burned surface, and 4, if coagulation is rapidly accomplished, i.e., by combined use of tannic acid and silver nitrate.

In the new directions, additional emphasis is placed on masking of both the patient and his attendants, in order to minimize the danger of secondary infection.

Courses in Physical and Occupational Therapy

Among the special courses being offered by Columbia University to prepare personnel for immediate and postwar rehabilitation, are two professional programs—physical therapy and occupational therapy. Technicians in both of these fields are in urgent demand in the Army and Navy as well as in the civilian field. Both of these specialized programs are designed to meet the requirements specified by the Council on Medical Education and Hospitals of the American Medical Association and are conducted within the university in close relationship with the College of Physicians and Surgeons, the departments of nursing education, and health and physical education of Teachers College. The required clinical practice will be given in the Columbia-Presbyterian Medical Center as well as in outstanding hospitals in the New York area.

Admission requirements for entrance into the nine-month course for physical therapy technicians include two years or sixty semester hours of college work (including physics and biology) or graduation from an accredited school of nursing or Physical Education.

Admission into the occupational therapy course requires at least one year of college and preferably two. A science, sociology, and psychology, are recommended prerequisites. The regular course has been accelerated to approximately two and a half years in length.

A certificate of proficiency is granted by the University following the satisfactory completion of either of these courses. A few scholarships are available.

Bulletins and further information may be obtained from the Physical and Occupational Therapy office, Room 312, School of Business, Columbia University.

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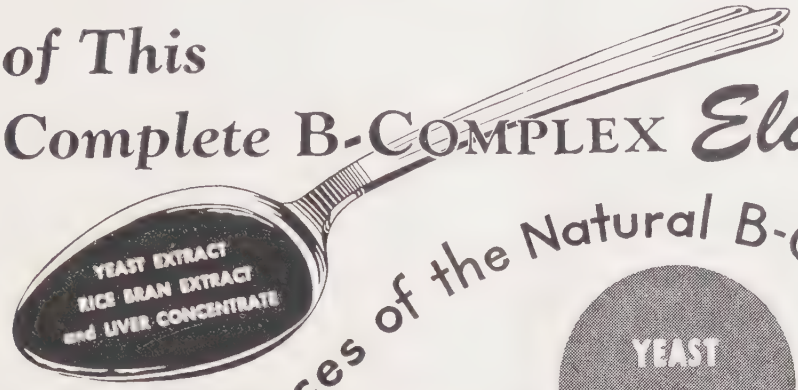
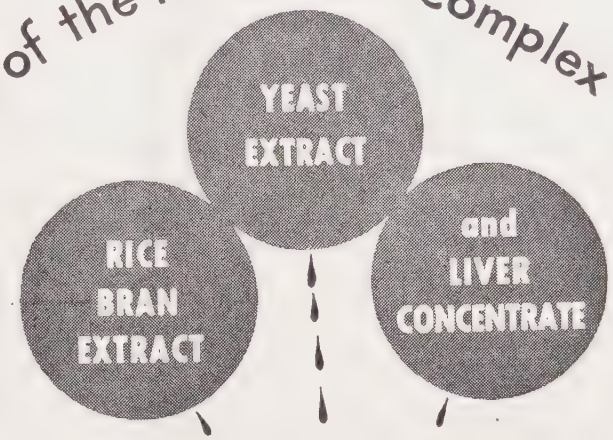


...all three sources of the Natural B-Complex



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Two hundred and fifty-seven member hospitals of Associated Hospital Service of New York have given formal approval to liberalization of the Blue Cross three-cents-a-day plan to provide additional services for the 1,365,000 members in the metropolitan area.

Under the broadened benefit program, operating rooms may be used as often as necessary, the former $25 limitation being removed. All x ray examinations consistent with the treatment required will be provided, the $25 limitation being waived. Laboratory examinations, formerly held to $20, are now limited only by the need. All drugs and medications are now provided, as are all dressings and plaster casts. The use of the cystoscopic room, cardiographic equipment, and physiotherapeutic equipment are made available at no added cost, as are basal metabolism tests. After twenty-one days of hospitalization, members receive a fifty percent discount for an additional period up to ninety days on all regular hospital charges including the services listed. The rate of payment to hospitals has now been increased to compensate them for this more comprehensive service. An extra allowance is likewise provided for those members who wish private room accommodations.

Another important part of the liberalization program is making available individual memberships to men and women under sixty years of age who cannot enroll through a place of employment. Individual applications may be made direct to the Plan's offices, 370 Lexington Avenue, New York, N.Y.

Infantile Paralysis Research

A special unit to study the various physiological problems involved in infantile paralysis and methods of treatment is being established at the University of Minnesota. Building space and basic laboratory facilities are already available at the University and the unit will be under the general direction of a committee composed of members of the departments of physiology, neuropsychiatry and pediatrics in the Medical School. Dr. Maurice B. Visscher, head of the department of physiology, will be in charge of administration. For the program of this investigation the National Foundation for Infantile Paralysis has approved a grant for a five-year period beginning July 1, 1943.

Dr. W. C. Coffey, president of the University, points out that much progress in the treatment of infantile paralysis has already been made at the University, and believes it is the logical place for further development of studies of the physiological problems involved in the disease. These problems will require the coordinated efforts of physiologists, biochemists, pharmacologists, pathologists, anatomists, neurologists, pediatrists, orthopedists and physical therapists.

The different departments of the Medical School will set up a coordinated program which will investigate the mechanics involved in the effects of various treatment procedures; the disturbances in the nervous system which produce the many different kinds of symptoms found in infantile paralysis; the nature of the chemical changes produced in the cells by the infantile paralysis virus, and other related problems.

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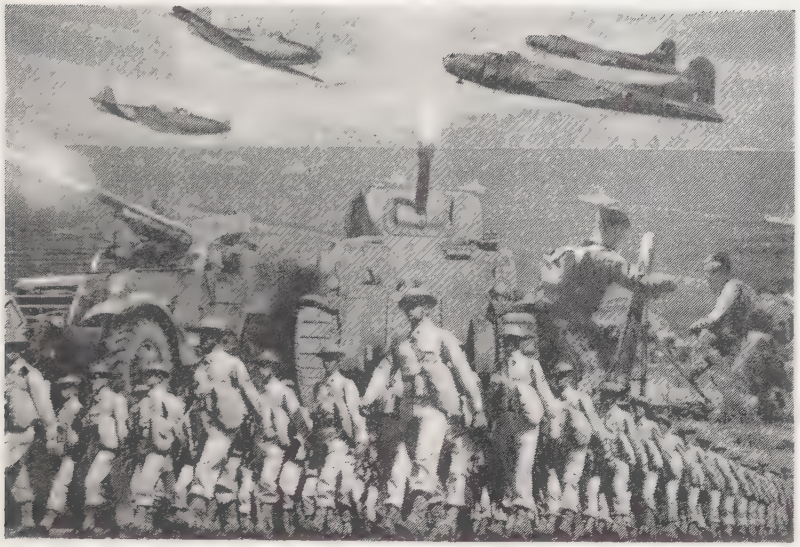

HYPERTENSION and National Defense

The social and economic loss caused by hypertension is of particular concern at the moment, since the active, sthenic, hard-working types of individuals are most susceptible to this disease.[1] Of further concern is the apparently decreasing age at which hypertension does harm.[2]

The U. S. Selective Service Survey of 900,000 youths between the ages of 21-36 years rejected for general military service (registrants examined prior to May 31, 1941) shows that defects of the cardiovascular system ranked highest among major causes for disqualification for *any* military service.[3]

Among the productive age group of 20-64 years, 35.9% of deaths are due to cardio, vascular-renal diseases.[4] Hypertension is a causative or associated factor in three-fourths of these yearly deaths.[5] It has been estimated that hypertension is responsible for 23% of all deaths of individuals over 50 years of age.[6] As a cause of morbidity as well as mortality, hypertension far outranks cancer.

1. ROBINSON, S. C., and BRUCER, M. Arch. Int. Med., 66:393, 1940.
2. ALLEN, E. V. Occupational Disease Symposium, Northwestern Univ. Med. Sch., p. 70, 1938.
3. ROWNTREE, L. G., McGILL, K. H., and FOLK, O. H. J.A.M.A., 118:1223, Apr. 4, 1942.
4. U. S. Census, 1938, Quoted from Public Health Reports, 56:2081, Oct. 24, 1941.
5. ADSON, A. W. *Hypertension.* Univ. of Pa. Press, Philadelphia, 1941, p. 21.
6. MULHOLLAND, S. W., J. Urol., 42:957, 1939.

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Our Contributors

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* * *

JULIUS BAUER, M.D., Los Angeles, Calif., obtained his medical degree from the University of Vienna in 1910 and did postgraduate work at the University of Paris. He began as demonstrator at the University of Vienna in 1908 and successively became assistant, clinical assistant, docent and professor of clinical medicine. He was the head of the medical department of the Policlinic Hospital in Vienna. In 1939, he was appointed clinical professor of medicine, Louisiana State University School of Medicine, New Orleans, and at the present time he is clinical professor of medicine at the College of Medical Evangelists, Los Angeles. He is known particularly for his work in constitutional pathology and clinical endocrinology. His favorite recreation is music, especially the violin. He is an honorary member of the Harvey Society and the St. Louis Medical Society.

* * *

JEROME M. SCHNECK, M.D., New York, N. Y., received his medical degree from Long Island College of Medicine, Brooklyn. He was formerly a lieutenant in the Field Artillery Reserve, U.S. Army, and a member of the U.S. Field Artillery Association. At present he is a lieutenant, Medical Department Reserve, U.S. Army, and is a member of the Reserve Officers Association of the United States. He is a member of the American Association of the History of Medicine and editor of *The Interne,* journal of the Association of Internes and Medical Students. He is at present an intern in the Jewish Hospital of Brooklyn.

* * *

JULIUS KAUNITZ, M.D., New York, N.Y., was graduated from the College of Physicians and Surgeons, Columbia University, in 1905, and served internships at Mt. Sinai, Montefiore, and Lying-In Hospitals. He was formerely visiting physician at the Montefiore and Sydenham Hospitals. At present he is visiting physician at the Seaview Hospital, and associate physician at Beth David Hospital. His researches include the physiopathology of pleural effusions and atalectasis, vascular pathology, indicating that thromboangiitis obliterans is a trophic disease; the importance of angiospasm in the development of arteriosclerosis; the damaging effects of high oxygen tensions on the heart and lungs, etc. These studies have been the basis for many original articles, some of which have appeared in foreign medical journals.

(*Continued on page* 466)

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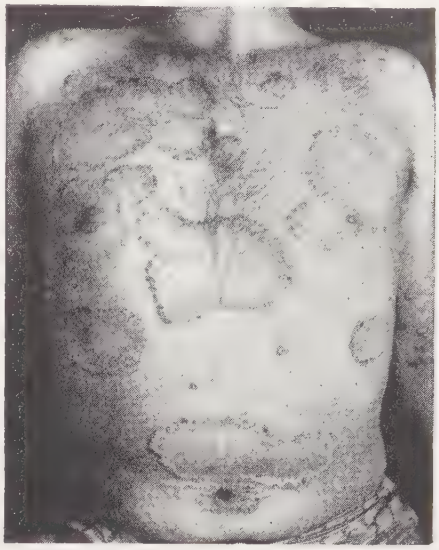

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Morris A. Lipkind, Phar.D., M.D., Miami Beach, Fla., was graduated in pharmacy from the New York College of Pharmacy, Columbia University, in 1902; received the degree of Phar.D. from the Brooklyn College of Pharmacy in 1910, and was graduated in medicine from the Long Island College of Medicine, Brooklyn, in 1917. He was formerly assistant attending surgeon, U.S. Public Health Service, and served as medical officer of the U.S. Coast Guard during the first world war. He served on the medical staffs of Beth David and Bronx Hospitals, New York, and was formerly engaged in general practice with special interest in gastrointestinal diseases until he retired in 1939. At present he spends his days reading books on history and biography and does a little writing, mostly on medicohistorical subjects. His pastime is chess.

* * *

Aaron Stolinsky, B.S., M.D., Boise, Idaho, was graduated from the University of St. Louis School of Medicine in 1926. He did postgraduate work in the Universities of Minnesota and Chicago, and also in Vienna during 1932 and 1933. He is a member of the American Medical Editors' and Authors' Association, and has written numerous articles on medical topics. His favorite pastime is collecting medical anecdotes and translating some from foreign languages. He is at present with the Veterans Administration.

* * *

Manuel Villaverde, M.D., Havana, Cuba, was graduated in medicine from the University of Madrid, Spain, and did postgraduate work in the Instituto de Patologia Interna, under the Director, Professor Gregorio Marañon. He is now chief of the department of endocrinology in one of Havana's leading hospitals. He is the author of two books, *Guide to the Study of Sexual Pathology* (1938), and *Nutrition and its Problems* (1942), and has had a number of articles published in medical journals. With Dr. J. Govea Peña, Dr. Villaverde did the original work on the clinical use of vitamin A in large doses in the treatment of essential hypertension.

Russia Appeals for Medical Literature

Russian War Relief, which is sending American medical textbooks to Russian schools training surgeons and doctors for the front lines, has issued a new appeal for contributions of medical literature.

The appeal was in response to requests from the Russian Society for Cultural Relations with Foreign Countries. Russian officials point out that many Soviet schools of medicine were evacuated thousands of miles to Central Asia and the Urals from Kharkov, Kiev and other occupied cities. In most cities libraries had to be left behind. The Kiev Medical Institute, cited as one example, was moved to Chelyabinsk in the Urals, 1300 miles away. The Kharkov Medical Institute is now at Chkalov, on the Ural River.

Many of the books sent from America to these and other medical schools were contributed by doctors and medical associations from all parts of the United States.

Inquiries or gifts of medical books should be sent to Russian War Relief, Inc., 11 East Thirty-Fifth Street, New York 16, N.Y. A complete list of the books needed in the Soviet Union will be sent upon request.

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New reprints available on cigarette research—Archives of Otolaryngology, February, 1943, pp. 169-173—March, 1943, pp. 404-410. Camel Cigarettes, Medical Relations Division, 1 Pershing Square, New York 17, N. Y.

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A GENERAL PRACTITIONER LOOKS AT SPECIALISTS

M. A. LIPKIND
Miami Beach, Florida

There was specialization in the practice of medicine even in the remote past. In the days of the ancient Greeks some physicians in the school of Hippocrates (460-370 B.C.) were recognized as especially proficient in certain practices in the medical field. In the oath of Hippocrates the physician pledges himself, "I will not use the knife not even, verily, on sufferers from stone, but I will give place to such as are craftsmen therein."

As early as the second century of the present era, in the time of Galen, there were, in addition to general practitioners, special doctors for the eye and ear. There were also special persons who treated only single disorders such as hernia, fistula and bladder stones, or who engaged in a single kind of treatment such as hydrotherapy or massage.

Surgery was practiced even in prehistoric times. From early human records we learn that many surgical instruments were devised and a large number of surgical operations were performed at the very dawn of history. Circumcision was performed with a sharpened flint. Operations were devised for venesection, trephining of the skull and Cæsarean section. By the fifth century of the Christian Era more than one hundred and twenty varieties of surgical instruments were in use. Difficult operations, as for stone in the bladder and the removal of cataract, were known and practiced.

During the first fifteen centuries of the present era surgery had a still greater development. The Greeks and Romans knew how to control hemorrhage by ligating blood vessels. They operated upon hernia and aneurysms. But the great Persian physician, Avicenna (980-1037), taught that surgery was an art inferior to medicine and should be kept separate from it.

The divorce of medicine from surgery was a fundamental error of medieval medicine. They relegated the general practice of surgery to "barbers, bath-keepers and wayfaring mountebanks", and left obstetrics to the midwives. Garrison when referring to that medieval period remarks, "To lift the surgical art to its modern scientific (aseptic) status required the genius and personal influence of the three greatest surgeons of all time —Ambroise Paré, John Hunter, and Lord Lister."

In this country, until the middle of the nineteenth century the practice of medicine was carried on by the family physician. This family physician was presumed to be competent in every medical field. A physician who limited himself to one field was not taken seriously in the old days. Surgeons combined a general practice with their surgery. There was no opportunity at that time for training in special lines. To become a specialist one had to go to Europe. However, the pioneer spirit of the time inspired also some medical men and here and there one ventured to the European institutions of learning. We find, for instance, Dr. John Morgan (1735-1789) on returning from Europe, announcing that henceforth he would have nothing to do with surgery or the dispensing of drugs but would devote himself entirely to the practice of medicine. However, in spite of men like Morgan there was no division between medicine and surgery until almost the end of the nineteenth century. The surgeon continued to carry on general practice.

Progress in the art of medicine continued slowly, through academic organizations, schools and accumulative experience gained from practice. Hand in hand with the legitimate physician there has always existed a group of healers, practical laymen, who developed methods of treatment. According to Clendening, the accumulated experience of these irregular healers was in time accepted by the medical world and gave rise to certain specialties.

The epoch-making discoveries made by Pasteur definitely changed the trend of medicine. He established that germs caused disease. As a result of his work and other new discoveries, medicine began to divide itself into branches, many of which were concerned with a special ability to use particular instruments. The technique of employing the many new devices and interpreting the observations became by itself an art to be acquired by long practice.

The progress of science and the social and economic organization of the new era gave impetus to the unprecedented rise in medical specialism. The enormous accumulated knowledge and variety of techniques were derived from systematic investigations in natural science and experimental methods in research, and with development in the fields of physics, chemistry, biology, physiology, psychology and pathology, new medical theories and practical technical procedures in diagnosis and therapy were established.

The new opportunities have stimulated medical men to do intensive work in special fields, resulting in the development of medical and surgical specialties.

Other conditions also came into play in this process. The effect of the great industrial movement of modern life influenced medical practice. Specialism in medicine

is the logical continuation of the process of division of labor with concentration upon restricted tasks which have characterized social and economic organization. Moreover, we find that in the last decades of the nineteenth century rapid concentration of our urban population began and medical specialism runs parallel with it. For specialists and consultants, with some exceptions, are to be found in the larger towns and cities.

The overemphasis of specialization at the beginning of our century is, therefore, accounted for by the rapid advance of scientific medicine, the great industrial movement of modern life and the urbanization of the population. We may add another factor, namely, commercial motivation due to larger fees for work in the specialties for consultations and surgery. Garrison states, "During the nineteenth century we see the physician becoming more and more impersonal, more of a business man and not so much influenced by the social and ethical obligations which were certainly a characteristic of the eighteenth century physician."

At the close of the nineteenth century we find in the medical press numerous articles in which the writers complain of the dangers of specialism. There were dire predictions as to the welfare of the general practitioner, who began to function as a clearing house or directory for the specialist. They send rectal cases to the proctologist, ear and nose cases to the otolaryngologist, other cases to the neurologist, to the psychiatrist, etc. One general practitioner expressed his feelings by saying, "if increasingly new slices are cut from off the field of general practice there will be nothing left for the general practitioner except the navel."

Another physician stated that his criticism was directed not so much against specialism or the new procedures but against the methods of their application: "We do not use a steam shovel to remove a little dirt from the sidewalk."

Specialism at that time and until recent years was really in a chaotic state. There was no legal restriction on the assumption of any specialist title. It was possible for any physician who was licensed to practice medicine to undertake any type of work which he conceived himself as fitted for. A physician, who was a good business man, could go to Vienna, register at a special clinic, and whether he spent his time in the clinic or just enjoyed a pleasant vacation, at the end he would get a handsome diploma from a society calling itself the American Medical Association of Vienna, which would hang in his consultation room and give him the prestige of a specialist. These abuses were, of course, exceptional. Many physicians were listed in the American Medical Association directory as specialists on the basis of their own statement; others having a numerous clientele, nominated themselves as specialists, not taking the trouble to be listed as such anywhere.

The medical profession began to concern itself seriously with the problem of developing standards and criteria by which the different specialties could be judged. The American College of Surgeons, organized in 1913 under the leadership of Dr. Franklin H. Martin, and the American College of Physicians exercised great care in the admission of members and accepted only such physicians as had received an adequate scientific training. Membership in such a college, therefore, constituted a guarantee of efficiency in the particular specialty. Other societies have taken similar action. The ophthalmologists in 1917, the otolaryngologists in 1924, and the gynecologists and obstetricians in 1930 have severally formed committees who examine candidates in these specialties and issue certificates.

However, all these efforts, while improving the condition of certain specialties, failed to solve the problem of specialist practice as a whole. It remained for the American Medical Association to accomplish the desired reform.

The American Medical Association began to participate actively in this movement about 1933. The Council of Medical Education and Hospitals of the American Medical Association defined the standards for suitable examining boards. Rules for examination were promulgated and methods of issuing diplomas were formulated. Physicians who possess the specified general qualifications, professional education and special training are eligible for examination by an examining board of his chosen specialty. There are boards for thirteen major specialties. Successful candidates receive a diploma. Holders of such diplomas are designated diplomates. The first directory of American medical specialists was issued in 1940. Likewise, the American Medical Association directory now indicates whether those who state that they are specialists have certificates from the boards in question.

Fishbein states that evidence based on questionnaires among medical students indicates that more than seventy percent of them look forward to limiting their practice to a specialty. Obviously, not all those who have these ambitions will eventually qualify, simply because the requirements are so great.

It has been estimated, according to the authority mentioned above, that among those who today are engaged in the practice of medicine in the United States approximately sixty-five percent are general practitioners and thirty-five percent specialists. The exact figures, however, are not available.

It may be of interest to evaluate the advantages and disadvantages of specialization. I cannot do better than to give an excerpt from Dr. Lewellys F. Barker's masterful analysis of this subject in which he enumerates the advantages and disadvantages of specialization.

Advantages

1. Increased productivity. Specialization in medicine and surgery as in commerce and industry is a device which has greatly increased the total results of professional labor. When tasks are subdivided and frequently repeated they become easier to perform.

2. Facilitated acquisition of skill. The general practitioner has too many different tasks to perform to permit him to acquire high skill in equal measure in all of them. The profession and the public gain by the education and training of specialists, who through restriction of their activities and constant practice gain experience that ensures unusual expertness.

3. Improved distribution of tasks among workers. Society is best served medically when each physician engages in the kind of work to which his native abilities and his special education are best suited.

4. Economy of material equipment and mental energy. Equipment requires less multiplication and there is less wastage from lack of use when medical tasks are subdivided and allocated to specialists. Mental friction is diminished when professional activities are restricted in scope and variety.

5. Swifter advancement of discovery and invention. The progress of medical science is markedly hastened by men who devote themselves exclusively to separate parts of the complex whole of medical work. Both discovery and invention of new technique are accelerated by specialized pursuit.

Disadvantages and Dangers of Specialism

1. Nonrecognition of its desirable limits. There is some danger that specialization may pass the limits in which it may be legitimately and advantageously cultivated. Society does not want a narrow visioned specialist, who has been defined as one who knows more and more about less and less.

2. One-sided study of the patient. A specialist interested in one organ is all too prone to forget the patient as a whole.

3. Deteriorative influence of our narrow specialism upon mind and character of practitioner. The specialist is in danger of growing vain, arrogant, stubbornly opinionated or boastfully self-sufficient, and thus detract from the honor and renown of a profession that should strive to be noble and worthy.

4. Mistakes made by patients who independently seek special skill. Reports of marvelous cures performed by some specialist reach the ears of a sick person or of some member of his family and the idea arises in the mind of the patient, "if the specialist cured so and so why shouldn't he cure me?" and the idea harbored often leads to the act of consultation, though the specialist concerned may be wholly unsuited to the patient's needs, and any well-informed general practitioner could have told him so at once and saved him unnecessary expenditure of time, energy and money.

5. Finally, there is always the danger of faulty cooperation among the general practitioners and specialists. General practitioners and specialists must learn to cooperate satisfactorily in the care of the sick, both for the welfare of their patients and for the good repute of the medical profession.

Conclusion

It looks to the general practitioner as though the limits of specialization desirable for our time are approached, if, indeed, they have not actually reached or even transcended them; for it is feared that increased restriction in the field of work will multiply progressively the dangers from specialization with the consequent loss of its advantages. However, there is no limit to the forward march of science. And, as new knowledge is acquired and valuable technical methods are devised, a demand will be created for more and more specially trained workers.

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A CONSIDERATION OF CERTAIN PSYCHOLOGICAL FACTORS IN THE WARTIME NUTRITIONAL PROGRAM*

LOWELL S. SELLING

Detroit, Mich.

(*Continued from page* 408)

This young woman's problem was not due only to a lack of technical ability in cooking, but to an emotional situation arising from the fact that her mother of whom she had always been jealous was known as a remarkable cook and this girl unconsciously attempted to avoid any situation which would place her in a position where she would be compared with her hated mother, especially one where the comparison would be to her disadvantage. After a short period of treatment by a psychiatrist, this complex was alleviated to some extent and with the improvement in her emotional tenseness, she gradually became a sufficiently adequate cook. The other parts of the domestic conflict then cleared up.

The insane, of course, should never be allowed in the kitchen until their diseases are so well understood that a competent psychiatrist knows that they will not try to injure themselves to secure attention, to do away with themselves, or to act on some foolish impulse which might harm them or others around them. A case is recorded where an inmate was permitted to work in the kitchen and, because of her delusion that one of the officers of the institution was trying to do her harm, she put rat poison in his soup, an act which might have resulted fatally had she not been observed doing it.

Another limitation to solving the problems of individual likes and dislikes lies in the economic weakness of some families. I have not felt that this was of great importance so far as latent starvation is concerned, for the reason that society now insists that no family be permitted to be completely impoverished, for when there is a lack of revenue from the wage earner, some organization, municipal, national, or charitable, will supplement the income. Yet nutrition in itself does not cure psychological hunger and even though the child staring through the restaurant window at the pancake flipper has a stomach full of bread, the sight of others eating cakes and syrup makes him hungry.

Economic security with regard to food becomes a matter of judicious buying. If the housewife is proper-

*From the Psychopathic Clinic of the Recorder's Court, Detroit, Series PD No. 4.

ly trained and has the mental endowment to buy judiciously, and the ingenuity to prepare foods in a varied and palatable fashion, she might be able to get along with even a single article of diet. For example, one time when my wife had planned to be away, my son and I were going to "batch it". He likes hamburgers and I told him for the two weeks we were alone we would have hamburger. He said he thought we would get tired of it, and I replied that was unlikely. I pointed out to him that we could have hamburger, Salisbury steak, meat balls, meat patties, ground beef, ground beef and bacon, ground beef and spaghetti casserole, etc., for the whole two weeks, and he could have hamburger every night and yet, since it was in a different and sufficiently palatable form, he would not get tired of it. It is such knowledge of variety that is lacking in many of our housewives.

It requires considerable ingenuity to be able to make small amounts go a long way. Ingenious recipes for the purpose of making a pound of meat appear like two pounds or a half a pound of butter appear as though it were a whole pound are provided during times of rationing or shortages, but these are rather limited in scope and often times create a physiological deficiency. In other words, the fact that two pounds of meat loaf can be made out of one pound of beef does not give the meat loaf any more protein food quality than there is in the meat. I cannot be sympathetic with the family who, by walking two blocks down the street, can buy twice as much stone-ground oats for warm cereal but prefers, lazily, to walk only half a block to buy some commercially prepared, more expensively packaged oatmeal.

Point rationing, too, is a challenge to the ingenuity of the housewife, for not only does she have to figure out how much money she has to spend, but she also has to decide what to do with the limited number of stamps she has available to get balance in her diet. The woman who is used to cooking out of cans must make a complete readjustment and only too seldom is the housewife willing or able to substitute home canned vegetables for commercial products. This is a psychological inertia and is difficult to overcome, resulting in severe conflict in the homes of inadequate women.

The point rationing of meats is even a more difficult problem for it requires not only the ability to devise a variety of meals with limited articles, but it requires a knowledge of food values. Whereas in nonration times, ground beef, as illustrated in the above example, could be used in a variety of ways to satisfy the psychological desire for variety, in times of rationing it probably provides the highest food value per point, if standards are kept up, and may be nutritionally more desirable than the cuts preferred by the housewife's family, so that her ability to vary the recipes is even more at a premium.

The economic picture must not be forgotten, because even in allegedly prosperous times there are some families who do not have enough money to buy a variety of articles of diet, although they may attempt to use up all their ration points. We cannot be sympathetic with the family who uses up ration points on stereotyped articles as I observed during the stamp plan and during the period of welfare food grants. Then, families who were given allowances for food would stick to one particular patented brand, whereas some other brand might be a means of diversifying the diet as well as providing additional food elements.

The same individual differences are important in institutional nutritional psychology. In a ward in a hospital we may have persons who have entirely different childhoods, one being brought up in Italy where he is fed spaghetti, another one in Mexico where he is fed hot tamales; one man might come from a rich economic background and become used to prime ribs of beef, while the man in the next bed probably had never had anything better than beef stew made of the cheapest cuts.

When advising our domestic relations cases about dietary matters, we in the clinic have in our clinical history all of the data pertaining to various backgrounds and eating habits of our patients. Some pertinent facts are available; first of all, we find that the economic background must be carefully analyzed as it often shows incompatibility in dietary interests. As pointed out above, the husband or wife may demand rich fare to compensate for the economic insecurity which he or she had in childhood.

It is not my opinion that the education of individuals is of great importance in causing family dietary discrepancies, but of course those who have eaten school lunches together often like the same articles of diet. Those who have been trained on fancy foods are often able to modify their tastes so that they can eat plain ones. Age differences are important. We cannot ignore the fact that the seventy-four year old husband, connoisseur of foods, may have different likes in his life than the young girl he marries who has been subsisting on a bird-like diet. Differences due to national background are really very great, and rejection of a spouse for emotional reasons expresses itself through contempt of his national background, and specifically through rejection of food characteristic of it.

The third limitation of dealing with psychological attitudes is to adjust food preparations so that basic likes and dislikes of two or more members of a household will be catered to without too much expenditure of time and money. It must be admitted that there are some husbands who will not like anything that the wife cooks, no matter how much some guest might have admired it. I have seen houses when company left after a happy week-end, with great expressions of admiration for the cooking of the mistress of the house, where the husband would not even grudgingly admit she was a good cook. Friction, due to other causes, has become so dominant that the dietetic problem cannot be solved without solving all the emotional situations of the family. When the major emotional source of friction is solved, often little or no dietetic reformation is needed.

Rationing will add to emotional friction of this sort, for the wife's problems due to her need for conserving her coupons will make her more tense. Few husbands of the less tolerant or less well adjusted type will be at all sympathetic with the wife's problems in trying to get them what they like in spite of government limitations. I have suggested to some patients that husbands be encouraged to do some of the family grocery buying, or at least accompany their wives, particularly during periods when the supplies are limited and prices are high, in order that they might understand the problem and even make suggestions for its alleviation.

(*Continued on page* 493)

Symposium on Internal Medicine

LOBAR PNEUMONIA—A HISTORICAL SURVEY

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There can be no question that a complete historical survey of a subject so vast as lobar pneumonia would probably require volumes for its satisfactory fulfillment. No pretense is made here to condense so great a topic within the limits of a few pages. Owing to the amazing results in therapy achieved by the expanding collection of chemotherapeutic agents one is tempted, perhaps, to spend more time than would otherwise be allotted to musings on the malady.

No doubt a little knowledge about the work of Cooper on type differentiation, which is relatively recent, and perhaps the recollection of 1881 as the date of discovery of the pneumococcus serve to make the average person think of advances in the understanding of the disease as being of rather recent date. The fact, of course, is that the disease was known and readily recognized many centuries ago, and clinical descriptions of pneumonia may be found in the writings of the ancients. This paper is confined rather to *lobar* pneumonia owing to the fact that in discussing immunological and bacteriological aspects of the problem, it will be kept within the bounds of the Diplococcus pneumoniæ. In view of the findings of Cecil, Baldwin, and Larsen (1) to the effect that in two thousand cases of lobar pneumonia the pneumococcus was responsible in 95.65 percent of the cases, the Streptococcus hemolyticus in 3.8 percent, and Friedländer's bacillus in 0.4 percent, this liberty seems warranted. It must be mentioned, too, that in dealing with a history such as this, many facts will pertain to pneumonia generally rather than to specific pathological or etiological variations of the disease. Obviously the necessity is based on the realization that these finer points were not recognized before adequate postmortem study was instituted or before the science of bacteriology was established.

Most investigators in various fields of research realize the benefits derived from discoveries in fields allied to their own investigative enterprises. And in medicine the discoveries of techniques in physical diagnosis, for example, were applied at first to areas of gross normality and pathology before the finer distinctions of pathological differentiations could be made. Discoveries of this nature bear particularly on the subject of pneumonia, although their value is not limited to this disease.

Thus, Leopold Auenbrugger (1722-1809), who was physician in chief of the Hospital of the Holy Trinity in Vienna (2), found as a result of clinical studies and experimentation with cadavers that he could learn about the condition of the inner recesses of the chest by striking it with the tips of his fingers. This was the method of immediate percussion, but today the usual percussion technique is mediate, wherein a finger acts as a pleximeter between the body wall and the percussing finger. Auenbrugger's discovery was not given its due consideration during his lifetime, but his findings were of great influence in succeeding years in the diagnosis of disease. The importance of physical diagnostic techniques such as this in the history of lobar pneumonia is unquestionably apparent, although the application of such procedures extends to numerous bodily afflictions.

Fortunately Auenbrugger's findings were appreciated by Jean-Nicolas Corvisart (1755-1821), who was a favorite physician of Napoleon and the teacher of Laennec. He introduced Auenbrugger's work on percussion to the European medical profession and popularized it after the technique had been neglected for approximately thirty-five years.

In dealing more directly with pneumonia we must pass back through the centuries to Aretaeus, the Cappadocian, who lived under either Domitian or Hadrian (second to third century A. D.) (3). He came nearer than any other Greek to the spirit and method of Hippocrates and he ranks next to Hippocrates as a clinician because of the accuracy and faithfulness of his descriptions of disease. Aretaeus has given classical accounts of pneumonia in addition to pleurisy with empyema, diabetes, tetanus, elephantiasis, diphtheria, and aura in epilepsy.

Among Galen's writings is a differentiation between pneumonia and pleurisy (3), but it was Aëtius of Amida whose writings on pneumonia are more accurate than those of Aretaeus. Aëtius, who lived in the sixth century A. D., was a royal physician to Justinian I and lord high chamberlain at the court of Byzantium. Many centuries afterwards, Giovanni Battista Morgagni (1682-1771), a pupil of Valsalva and later a professor at Padua (1715-1771), published the results of his life-work when he was seventy-nine years old. This consisted of five books of letters, seventy letters in all, which constituted the true foundation of modern pathological anatomy in that the records of postmortem findings are correlated for the first time with clinical records in an extensive manner. Morgagni identified the clinical features of pneumonia with solidification of the lungs. The first accurate definition of hepatization of the lungs in pneumonia was given by Matthew Baillie (1761-1823), a native of Lanarkshire, Scotland.

René Théophile Hyacinthe Laennec (1781-1826) invented the stethoscope and it would be completely superfluous to voice the influence of this event on the history of the diagnosis of pneumonia. Laennec's ideas were immediately accepted by his contemporaries, so that he experienced the satisfaction never accorded to Auenbrugger. He was greatly interested in diseases of the chest (2) and was one of the greatest teachers of pulmonary tuberculosis. Laennec died of this disease

and it has been mentioned at times that often famed students have died of the disease which were of greatest interest to them. This impressed Harvey Cushing (6), who remarked in his well known biography that Sir William Osler died of a disease which had interested him so much and whose problems served so well as material for extensive study. Osler died of pneumonia.

Prior to Laennec, differences in the types of lesions in various stages of lobar pneumonia had been recognized. Since Laennec, lung lesions have been described as the stage of engorgement, the state of red hepatization or the hepatization of Laennec, and the stage of gray hepatization or the purulent infiltration of Laennec (4). The state of the lung during the state of engorgement is described by Laennec (5) as follows: "In this degree, the lung is externally of a livid or violet hue, heavier, and much more solid than natural. It is, however, still crepitous but much less so than in a sound state, and on pressing it between the fingers, we perceive that it is injected by a liquid. It retains the impression of the fingers nearly like an edematous limb. When cut into, it appears of a livid, or blood color, is quite injected with a frothy serous fluid, more or less sanguineous, which flows from it abundantly. We can still, however, discover very clearly the natural alveolar and spongy texture of the viscus, except, in some points, where the obstruction is more solid and compact, indicating the transition from the first to the second degree of peripneumony."

Laennec compared the crepitant râles of pneumonia to "noise emitted by the healthy lungs when compressed by the hand—only stronger" (4). Later writers described them as a crackling caused by rubbing a tuft of hair between the fingers.

From this discussion it is evident that the outstanding contributions over a period of centuries center around individuals who are prominent in the annals of medical history. It must be realized, however, that hundreds of people, long forgotten, contributed to the acquisition of knowledge of lobar pneumonia. In dealing with this subject from the year 1881 and on through the present years, the names of numerous workers will be quite familiar. Obviously two reasons, at least, may account for this. The first is that the advances in the bacteriology, immunology, and therapy of the disease have been rapid. The second is because the names of the recent investigators and details of their work are so often mentioned and repeated in current literature. It has long been a favorite topic for argument as to whether great people are molded by the development of great events or whether great events are fostered by great people. The problem has never been solved satisfactorily, but it is of interest at the moment, nevertheless, because in the history of lobar pneumonia we have the association of great events with great names inseparably bound together.

The term "pneumonia" was used at first as a clinical expression and the anatomical significance was only assumed (4). At this stage of interpretation, it included all inflammatory conditions of the lung parenchyma associated with an acute febrile state. Later on the lesions were differentiated from one another. The term "acute lobar pneumonia" was then applied to the condition having extensive uniform involvement of large portions of the parenchyma of the lung associated with a fairly well defined syndrome. Afterwards it was found that associated with this in the majority of cases were the bacteria called pneumococci which were present in the lung.

Long before the actual bacteriological facts had been ascertained, many far-sighted clinicians held the opinion that lobar pneumonia was an infectious disease (7). Bacteriological investigation of pneumonia was difficult because of the abundant bacterial flora normally found in the upper respiratory tract. Also, lobar pneumonia and other forms of pneumonia are caused by various organisms.

No discussion regarding early development of the microscope and bacteriological investigations will be presented, for the purpose of brevity. It should be mentioned that various types of cocci having different cultural characteristics were isolated from cases of pneumonia by Klebs, Koch, Guenther, Talamon, and others. These people did not possess sufficient methods of bacteriological differentiation, so that it cannot be determined positively whether these organisms can be identified with what is known at present as the pneumoccus or Diplococcus pneumoniæ. The work of these men supplied information regarding the variety of bacterial factors involved in acute pulmonary disease and it lead incidentally to the discovery of Bacillus mucosus capsulatus of Friedländer.

Colonel Edgar Erskine Hume states that among the great contributions to science by medical officers of the United States Army are three books, each one of which is considered a milestone in its field (8, 9). He lists the first American book on surgery by Surgeon John Jones, the first American pharmacopœia by Physician General William Brown, and the first American textbook on bacteriology by Surgeon General George Miller Sternberg (1838-1915) which appeared in 1884. Garrison says Sternberg was the first American army surgeon to take up the study of bacteriology (3).

Sternberg and Pasteur published simultaneously and independently, in 1881, reports on lance-shaped cocci that are found in saliva. These cocci were capable of producing septicemia in rabbits and both Sternberg and Pasteur were dealing with the pneumococcus. Neither man associated the organism described with lobar pneumonia. This problem was solved later by Fränkel and Weichselbaum. As with Sternberg and Pasteur, so Fränkel and Weichselbaum published their findings independently of each other in 1886 when they demonstrated that the pneumococcus is the etiological factor in a large majority of cases of lobar pneumonia (7).

Neufeld and Händel showed that in studying pneumococci, one was not dealing with a single organism but rather with a group of organisms. Cole and his coworkers at the Rockefeller Hospital have pointed this out too. The first groups segregated were three specific types which were named Types I, II, and III. The remaining pneumococcal organisms comprised a heterogeneous group and this group was classified as Group IV. Cooper and her associates were able to distinguish numerous types from Type II and Group IV. Therapeutic antisera have been prepared against some of them. By 1939, thirty-two types of pneumococci were recognized and the distinction was based upon serological reactions. Organisms of Type III provided

the exception because of their mucoid growth which is sufficiently characteristic to be recognized.

In order to differentiate pneumococci from streptococci, Hiss made up a medium comprised of one part of beef serum to two parts of distilled water. To this, one percent of inulin was added and then enough litmus to make the medium a clear and transparent blue. The pneumococcus ferments the inulin thus acidifying the mixture and causing, as a result, the coagulation of the serum. Inulin is not fermented by streptococci with the exception of several nonhemolytic indifferent strains. Inulin fermentation is considered to be an important differential characteristic of the peumococci.

Neufeld described his *quellung* reaction wherein the capsule of the pneumococcus swells under the action of the type specific rabbit antipneumococcal serum. The *quellung* reaction is utilized as a diagnostic procedure.

There are special methods of staining for demonstration of the capsule of the pneumococcus and one that is used often is the copper sulfate method of Hiss. The easiest method, according to Zinsser and Bayne-Jones (7), to apply successfully to material from cultures, is the Huntoon capsule stain, but it is not adapted for use on pathological material. The Gram-Weigert technique is deemed very good for simple staining of pneumococci in tissue sections, and Wadsworth likewise described a method. All these details serve to indicate briefly the extent of scientific study and investigation, even in a limited field of research, centered around one disease.

It was in 1910 that Neufeld and Händel discovered that pneumococci were not alike serologically. All true pneumococci have morphological and cultural characteristics which tend to make one consider them a single species. But there are definite serological differentiations among members of the group. The work of Neufeld and Händel was confirmed by Dochez and Gillespie. Dochez and Gillespie also studied pneumococcus types found in America by using agglutination reactions and protection tests on mice. They were able to isolate a large number of strains of pneumococci and animals were immunized with them. Following this, the sera of the immunized animals were examined for cross-agglutination with the different strains and the sera were tested for their protective powers on mice. By these means, Dochez and Gillespie found that pneumococci fell into several distinct classes and their classification has been confirmed many times (7). As has been mentioned, three main types, I, II, and III, and a heterogeneous Group IV were established. Type III was formerly called Streptococcus mucosus, but it ferments inulin, is soluble in bile, and has pathogenic properties similar to those of the pneumococci, so it is included among them. The Dochez and Gillespie classification was accepted widely and it has been used constantly since 1913.

Between 1913 and 1928, Avery and Clough established subgroups of Type II. In South Africa, Lister found homogeneous types which he called A, B, and C. Types I and II of the American classification corresponded to Types C and B of Lister's classification. Lister's Type A did not correspond with either Type I, II, or III of the American classification. Cooper, and Harris, Snugg and Neill, recognized atypical Type III pneumococci, so that it seems there are many other types of pneumococci in the United States and other countries throughout the world.

Cooper, in the 1920's, working in the laboratory of the New York City Department of Health (7, 10), extended the serological differentiation of pneumococci. She found that approximately sixty percent of pneumococci cultures at the Harlem Hospital could be classified into types. She and her associates found twenty-nine additional types among Group IV or as atypical members of Types II and III. By 1939, thirty-two types of pneumococci, Types I to XXXII by designation, were recognized. Most of the new types were quite distinct, but there were slight cross-reactions between some of the types. The main cross-reactions were between Types II and V, III and VIII, VII and XVIII, XV and XXX. Type IV of Cooper includes Pneumococcus 10 of Griffith and Group IVB of Robinson. Type V includes subtype IIA of Avery. Type VI includes subtypes IIB of Avery, and Type VIII includes atypical III. Additional types will probably be recognized as a result of future investigation. Type specific sera developed for several types of pneumococci introduced important therapeutic advances and, although at present their importance has been somewhat overshadowed by the successes of chemotherapy, their value has definitely not been completely eliminated as far as modern treatment is concerned.

Streptococcus mucosus or Pneumococcus Type III was first described definitely by Howard and Perkins in 1901 and it was studied carefully later on by Schottmüller, who isolated it from cases of parametritis, peritonitis, meningitis, and phlebitis. The organisms of this group are bile soluble and although occasional strains, as demonstrated by Dochez and Gillespie, do not ferment inulin (7) and are not bile soluble, they are included among the pneumococci.

In 1917 Dochez and Avery discovered the soluble specific substance (SSS) which is a complex polysaccharide in the capsule of the pneumococcus. It was found in the broth cultures of pneumococci and in the blood and urine of patients with pneumonia. In 1923 Zinsser and Parker recognized similar substances in other bacteria as partial antigens or haptenes. They called them "residue antigens". Without offering details about the work done along these lines, suffice it to say that other prominent workers who contributed greatly to the knowledge about the chemistry and bacteriology of lobar pneumonia were Tillet, Francis, Enders, Wadsworth, Brown, Churchman, Emelianoff, Bailey, Shoub, Peabody, and Sunderman. Contributions to the immunology of the disease were made by Cecil and Plummer, Sutliff, Park, Horsfall, Goodner and MacLeod, Bullowa, and numerous others (7, 11, 12).

Interestingly enough, Dr. William Hallock Park, one of the greatest contemporary leaders in the field of public health, who was interested predominantly in the subject of diphtheria, elected to speak on lobar pneumonia when asked to deliver in 1930 the Harben Lectures before the Royal Institute of Public Health (10). In his first lecture Park reviewed the work of Avery, Lister, Olmstead, Cooper and Mishulow. In his second lecture, Park discussed at length the epidemiological survey made by Georgia Cooper and he spoke also about the unsuccessful attempt he

made with Von Sholly to vaccinate the employees of the Metropolitan Life Insurance Company against acute respiratory diseases. Then he discussed the serum prepared by Felton in 1924. This was a highly potent serum made by precipitating antibodies with distilled water. In the third and last lecture, Park discussed the use of pneumococcus vaccine and the specific anti-pneumococcus sera in the treatment of lobar pneumonia.

Pneumonia is widely existent in all civilized countries, as evidenced particularly by mortality statistics. In 1913 there were 83,778 deaths from pneumonia in the registration area of the United States. Thirty-seven and one tenth percent of the deaths were supposed to have been due to bronchopneumonia and sixty-two and nine tenths percent to lobar pneumonia and undefined pneumonia. Many cases of "undefined pneumonia" (4) were probably lobar pneumonia. It is difficult to determine whether the disease is increasing or decreasing in the United States. Epidemics of streptococcus pneumonia and influenza have complicated the statistics. There is a possibility that the apparent decrease in the incidence of lobar pneumonia may be the result of the more correct diagnosis of bronchopneumonia (4). Definite conclusions are probably unwarranted at this time.

Numerous investigations have been carried out to determine the extent of the etiology of the pneumococcus in lobar pneumonia.

Cole (4) lists the bacteria isolated from 529 cases of pneumonia with an extensive consolidation of one or more lobes, as follows: Diplococcus pneumoniæ, 454; Friedländer's bacillus, 3; Bacillus influenzæ, 6; Streptcoccus pyogenes, 7; Streptococcus mucosus, 1; Staphylococcus aureus, 3; mixed infection with Staphylococcus aureus, Friedländer's bacillus, Bacillus influenzæ, Streptococcus pyogenes, and Streptococcus viridans, 6; undetermined (most of them occurring before accurate methods for determining the etiological agent had been devised), 49.

Pneumonia is endemic in most of the well-populated areas throughout the world but evidently it occurs more frequently in the temperate zones. The largest epidemics which have occurred during the past few years have taken place in the South African mining districts, Panama, and in camps and armies during the first world war. Pneumonia of all kinds has caused about ten percent of the deaths in ordinary times, but it has accounted for a higher percentage under conditions such as those which existed during the first world war.

Anders studied the distribution of pneumonia in Philadelphia and found that the highest incidence of the disease occurred in the most densely populated areas (1). The influence of overcrowding was observed by Gorgas from his experience in Panama in 1906 and 1907 (1, 13). He studied the subject a few years later among miners of the South African Rand. Before 1907, the negroes who worked on the Isthmus were housed in barracks, but in 1907 they were moved from barracks and allowed to separate on down the length of the Canal. An immediate drop in the death rate was noted. In 1906 it had been 18.74 per thousand, and in 1907 it was 10.65 per thousand. In the years that followed up to and including 1912 the death rate did not go above 2.60 per thousand. In his investigation of the miners in South Africa, Gorgas showed that the crowded conditions under which the men lived had an unquestionable influence on the high incidence of pneumonia.

In discussing the history of lobar pneumonia ample emphasis must be placed on the clinician. Whereas we date other achievements in the field of pathology, bacteriology or chemistry as having occurred essentially during certain decades, the contributions of clinicians have extended through the years from the ancients to the moderns. The students of ancient times may have aspired to be a Hippocrates just as many students today aspire to emulate Osler. Pneumonia, a disease requiring good nursing and good doctor-patient relationship, was well recognized by Hippocrates and other Greek students of medicine (14). Hippocrates (460-370 B. C.), to whom Laennec claimed he was indebted for the idea which suggested to him the technique of auscultation, was a contemporary of Socrates and Aristophanes (2). It is well known that he separated medicine from mystery and religion. His great accomplishment was the reform in the temple cult of healing by placing upon human beings, not the gods, the responsibility for the prevention and treatment of disease. The Greeks and the Egyptians before Hippocrates had studied symptoms and cures, and Hippocrates did not introduce or create the medical knowledge of his time. He coordinated knowledge and correlated facts. He was the founder of the bedside method "which was to become the distinctive attribute of all great physicians" (2), and he was concerned with the man as well as the disease. He practiced medicine as both an art and a science.

In dealing with the treatment of lobar pneumonia, the physicians of several years ago would have been concerned with general supportive measures, stimulants and sedatives, and venesection. The physicians of recent years would think of serum therapy, and those of today, mainly chemotherapy. In considering the latter, one tends to recall Paul Ehrlich whose work marked the beginning of the recent trend in medicine from bacterial to biochemical investigation (2). To think immediately of the "sulfa" drugs would not be entirely justifiable, because these were preceded by experimental investigation with optochin, a quinine derivative discovered by Morgenroth. Optochin had a specific bactericidal action on pneumococci in the test tube, and when given to animals infected with pneumococci it caused the disappearance of the organisms from the blood. Moore and Chesney (4) carried out studies with optochin at the Hospital of the Rockefeller Institute, with disappointing results. Quinine has a slight bactericidal action on pneumococci *in vitro,* but its effect is small when compared to optochin.

In 1908, Gelmo first prepared para-amino-benzene sulfonamide (sulfanilamide) during the course of his studies on azo dyes, but many years passed before it was utilized to combat human bacterial infections (15). In 1932, Domagk, director of the pathological laboratory in Elberfeld, Germany, working with Klarer and Mietzsch, found that prontosil, which contains a sulfonamide group, could protect mice suffering from streptococcal septicemia. Later he found that the drug was effective in other experimental infections in laboratory animals. Domagk is credited with

the discovery of the chemotherapeutic value of prontosil and he was awarded the Nobel Prize in Medicine in 1938. Fourneau and his associates showed, in 1936, that para-amino-benzene sulfonamide was as effective as prontosil in curing experimental infections, and similar findings were reported by Goissedet in the same year. When the English investigators, Colebrook and Kenny, Buttle, Gray and Stephenson, reported good results with these drugs, the medical profession was awakened to the new field of bacterial chemotherapy and experimental and clinical articles began to appear in great numbers. In the United States, Long and Bliss of the Johns Hopkins Hospital and Medical School, proposed that sulfanilamide acts by exerting a bacteriostatic rather than a bactericidal effect on microorganisms. Basic pharmacological and toxicological attributes of sulfanilamide were presented by Marshall and his collaborators. Applications of the sulfonamide compounds to lobar pneumonia soon were effected and it was not long before the value of sulfapyridine, sulfathiazole, and sulfadiazine was discovered (16, 17).

In a very recent article (18), Flippin, Schwartz, and Domm have shown that in the series of cases of pneumococcic pneumonia they studied between August 15, 1938, and April 1, 1942, 1,635 adults were treated with sulfapyridine, sulfathiazole, or sulfadiazine with an average mortality of 10.6 percent. This figure was compared with the 40.1 percent mortality obtained in 1,904 cases of pneumococcic pneumonia observed at the Philadelphia General Hospital during the five years prior to the introduction of these drugs. They proceeded to express their opinion, based on their studies, that at the present time sulfadiazine is the drug of choice for the treatment of pneumococcic pneumonia.

Considering all aspects of the topic, one cannot help but be exceedingly impressed with the tremendous advances in the knowledge of lobar pneumonia since the identification of the microbe *septicémique du salive* by Pasteur (for he had identified it from the saliva of a case of rabies), the similar observation of Sternberg when he examined the saliva of healthy persons, and the discovery of the relationship of the organism to the disease by Fränkel and Weichselbaum. When we today marvel at the tremendously decreased mortality brought about, first by type specific sera and afterwards by the sulfonamide drugs, it can be imagined what effect the bedside observations today would have on the early investigators. Yet through the centuries and despite all recent scientific advances we would do well to honor the memory of Hippocrates, Auenbrugger, Laennec, and men of their calibre, whose keen observations and clinical acumen have placed medicine on the plane it occupies today.

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THE BROKEN HEART: MYOCARDIAL INFARCTION OF PSYCHIC ORIGIN

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A woman is told of the death of her child. She has a sudden severe pain over her heart, turns ashen gray, goes into collapse, and dies. Her friends will say that she died of a broken heart. Instances are commonplace in which grief at the loss of a relative, a lover, or a fortune, have had such tragic "results". Any intense emotion, such as fright, anger or elation, may have a similar effect on the human organism, but because of man's sentimental nature he ascribes the "broken heart" only to grief. The pain over the heart naturally directs his attention to that organ, and his use of "broken" is not far afield when we acknowledge fragmentation of the heart muscle in the course of myocardial infarction.

Studies of precipitating causes in cases of angina pectoris and coronary thrombosis have revealed that a large number had their inception in some severe emotional strain, such as the news of a relative's death, a hold-up, a heated argument at a game of cards, or winning the sweepstake. In an analysis of one hundred fatalities, Fitzhugh and Hamiltion (1) found twelve cases that were associated with some such excitement. Master, Dack and Jaffe (2), in a study of 530 attacks of coronary thrombosis, found five and one-tenth percent ushered in by some high degree of excitement. They, however, do not believe the excitement was responsible for any of the attacks. They carefully dis-

tinguish between coronary occlusion and angina pectoris, considering the latter purely functional in nature and due to a reflex coronary spasm which can be precipitated by the emotions.

Many years ago John Hunter made the classical remark that "My life is at the mercy of any rascal who chooses to tease or annoy me". His own fatal attack did occur during a fit of anger. Was his death due to angina pectoris or to coronary thrombosis? Could the fit of anger initiate an attack of coronary thrombosis? Can an attack of angina pectoris cause myocardial infarction?

The almost universal use of sedatives and vasodilators in the prevention and treatment of angina pectoris testifies eloquently to the importance attributed to coronary spasm. There are, of course, other causes; extra cardiac diseases, such as cholelithiasis, gastric ulcer and hiatus hernia may masquerade as intrinsic anginal attacks. Angina pectoris of cardiac origin is generally due to organic narrowing of the coronary vessels caused by atherosclerosis, thrombosis, embolism or inflammation. Attacks in all these instances may be precipitated by some dietary indiscretion or overexertion. However, those intrinsic anginal episodes brought on by emotional disturbance are of a functional nature and must with our present knowledge be attributed to spasm of coronary arteries and arterioles rendered more sensitive by an atherosclerotic condition. The anginal symptoms are due to the hypoxia, and in severe cases anoxia of the myocardium, depending upon the degree and duration of the spasm. Hypoxia, if prolonged, may result in myocardial damage (3).

The delicate nature of the arteries, so richly supplied with sympathetic fibers, suggests that those vessels themselves may be the site of pain during a severe spasm, and so contribute to the anginal syndrome.

Libman (4) was one of the first to indicate that myocardial infarction may result from coronary spasm. Since then, Davenport (5), Barnes and Hall (6), Brown (7), Gross and Sternberg (8), and others have described many such deaths due to angina pectoris with myocardial degeneration but without coronary occlusion. Krumbhaar and Crowell (9) report a case of rupture of the heart in an area where the coronaries were patent.

That prolonged arterial spasm can result in degeneration of the tissues they supply is now well known. In animal experiments (10), where ergot was administered, I obtained constriction of the arteries and dilatation of the capillaries and venules. This dystonic condition of the vessels was regarded as responsible for gangrene of the comb and degeneration of the muscle fibers. Lewis (11) later came to the same conclusion after similar investigations. Prolonged arterial constriction, according to Krogh (12), results in a lack of tone in the capillaries and consequently dilatation. The resulting pathology may be ascribed to stasis anoxemia, a condition probably accounting for myocardial infarction due to coronary spasm. Wearn (13) found in animal experiments the oxygen saturation of coronary venous blood one-third of that of the femoral veins, indicating how relatively closer is heart muscle to the fringe of oxygen starvation.

Severe spasm of the vessels may affect the vessel wall itself: In ergotism (14) there was observed, 1, constriction of the vessel, thickening of the wall and narrowing of the lumen; 2, infolding of the intima and media into the lumen; 3, separation of the medial fibers and of the intima from the media; 4, subintimal hemorrhage; 5, intimal thickening; 6, sclerotic and hyaline changes, and 7, thrombus formation.

A total of 41.3 percent of the cases reported by Master and coworkers (2) were at rest or asleep during the attack of coronary thrombosis; periods when the circulation is at the lowest ebb and therefore susceptible to thrombus formation. Thrombi are known to form during periods of stasis even in normal vessels, and in sclerotic coronaries the tendency to thrombus formation should be greater.

The thrombosis resulting from severe spasm has a slightly different physiopathology. There is first of all a stasis in the constricted vessel; secondly, an injury of the intima liberating cephalin-protein compounds which, according to Wiggers (15), act as activators of prothrombin. Blood stasis in the constricted vessel intensifies the effect of this process. Although there may be better explanations for the thrombosis resulting from spasm, the important fact is that thrombosis does take place, and that spasm is probably important in precipitating coronary thrombosis.

The subjective and objective symptoms of coronary thrombosis and angina pectoris are indistinguishable, except, perhaps, when very mild. One can speculate on the possibility of spasm of a coronary artery ceasing after a short period or continuing until a thrombus has formed. A patient, such as John Hunter, may have had repeated attacks of angina, the last one culminating in coronary thrombosis. It is interesting to note here that White (16) mentions coronary thrombosis as a complication in twenty-six percent of five hundred cases of angina pectoris, and that attacks of angina pectoris preceded coronary thrombosis in about half the cases.

As has been mentioned, vascular spasm has been observed to cause both sclerotic and hyaline degeneration. This result has been attributed to the constriction of the vasa vasorum and mural lymph spaces. If severe constriction has such a deleterious effect on the vessels, we can assume that each anginal attack must leave its imprint on the coronary artery. This may explain the deterioration that takes place in some patients who appear to lose ground with each anginal attack.

Vascular spasm of a minor nature, not due to severe emotional strains but to the every day buffeting of a tense abnormal urban existence, must be considered in relation to the mounting incidence of cardiovascular disease. Moschcowitz (17) has been an exponent of the theory of psychogenesis in the etiology of arteriosclerosis. He, however, attributes the pathology to hypertension. Katz and Leiter (18) have considered the psychosomatic nature of hypertension in great detail and particularly the various nerves in relation to the emotions and vascular constriction. One cannot escape the feeling that the frequent constriction of the vessels beyond their normal tonic state must have a damaging influence in the long run, the vessels becoming more and more sclerotic until the organ they nourish no longer receives the adequate supply of oxygen and other metabolites. Knowing that the heart muscle cannot tolerate much of an oxygen debt, we can readily understand why narrowing of the coronary arteries, whether organic or functional, must prove harmful to the heart.

Summary

1. It is generally accepted that anginal attacks frequently represent a reaction to some intense emotion, and in these instances the mechanism for the attack is reflex spasm of the coronary arteries.

2. Prolonged spasm of arteries can cause degeneration of the tissues they supply. This may explain the finding, in a large group of cases, of myocardial infarction where no obliteration of the coronary lumen is detectable.

3. Severe prolonged spasm can cause local thrombosis in the artery. This may explain a group of cases of anginal attacks terminating in coronary thrombosis.

4. Since intense emotion may result in coronary spasm, and the latter in myocardial infarction, it would seem that the association of such intense emotions with death from myocardial infarction is not merely a coincidence, but actually cause and effect.

5. Consideration is given to the progressive vascular and myocardial degeneration resulting from vascular spasm caused by the daily emotional strain of our urban life.

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NEGLECTED POINTS IN PHYSICAL EXAMINATION OF THE HEART*

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To comment upon neglected points in physical examination of the heart is somewhat embarrassing, because those who usually constitute the audience when such papers are presented do not neglect any points, while those who might be guilty of such carelessness do not, as a rule, attend such meetings. Do not expect to hear anything new. You may, however, recall and pay more attention to one or another well known item in the physical examination of your heart patients.

It is a sound trend in medicine to base diagnostic considerations upon objective signs, symptoms, and figures as much as possible. Roentgenology and electrocardiography, determination of circulation time, registration of heart sounds and murmurs, and the use of other more or less complicated apparatus, supply us with invaluable objective signs and figures concerning a patient's heart ailment. Nevertheless, we cannot and never will dispense with the more subjective information about a patient's condition gathered merely by means of our senses. Leading cardiologists are warning over and over again not to expect more diagnostic information from electrocardiography than it possibly can render according to its fundamental principle. A subjective factor is inevitable in most of our diagnostic considerations and conclusions anyhow.

We shall discuss briefly some of the signs frequently neglected in cardiac patients that may be of diagnostic help and may be discovered by looking, listening and feeling at the right place in a proper manner.

1. Inspection

We should avail ourselves of bright daylight, if possible, in examining patients. Minimal degrees of cyanosis, subicteric tinge of the scleræ or skin, indicating cardiac decompensation, can easily be overlooked under artificial illumination. The contrast between the pink cheeks and the general pallor of the face in patients with bacterial endocarditis is more evident in daylight than in artificial light. Unfortunately our female patients are not aware of the fact that the use of rouge and a lipstick in make up is often a handicap to the diagnostician. Even severe anemia, which would account for palpitation or anginal pain, might be overlooked as a result of this fashionable nuisance. A glance

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at the conjunctivæ and at the palms of the hands will readily detect the anemia even before a blood count is available.

Cheyne-Stokes' respiration will be overlooked only by negligence. This, however, may have disastrous consequences. Whereas large doses of aminophylline given intravenously are a specific remedy, first recommended for this condition by my former associate, A. Vogl, the administration of morphine further depresses the excitability of the sluggish respiratory center and death may ensue—a treatment that is so effective in cardiac asthma and so dangerous in patients with Cheyne-Stokes' breathing.

A thorough inspection will occasionally reveal a pulsating bulge of the chest wall suggestive of either an aortic aneurysm or of valvular heart disease. If localized over the median part of the chest and displaying a heaving systolic pulsation, it is due to mitral stenosis that probably had been acquired in childhood, or to congenital heart disease. An active epigastric pulsation may be indicative of hypertrophy of the right ventricle. It may, however, also be due to a visible transmission of the aortic pulsations to the epigastrium in slender, asthenic individuals with enteroptosis.

Many signs of constrictive pericarditis and fibrous mediastinopericarditis can be found by careful inspection. Systolic depression of both the intercostal spaces and ribs *instead* of a systolic apical thrust is the most important sign. One should keep in mind, however, that a systolic depression of the intercostal spaces in the neighborhood of a forceful systolic apical thrust may be observed in left ventricular hypertrophy. Frequently the diastolic propulsion of the apical region in constrictive pericarditis is even more marked than the systolic depression. An infrequent sign of mediastinopericarditis is the systolic retraction of the intercostal spaces in the left axillary and posterior region above the diaphragm. This socalled Broadbent's sign must be searched for on deep inspiration and in a proper light. Fibrous mediastinopericarditis with firm fixation of the heart to the anterior and posterior chest wall can prevent the normal anteroposterior expansion of the chest on deep inspiration. More frequently it is the cause of a swelling of the veins of the neck during inspiration. Under normal conditions these veins empty more rapidly at the inspiratory phase because of the intrathoracic suction. Mediastinopericardial adhesions, however, may inhibit the venous inflow during inspiration by partial strangulation of the cava.

The behaviour of the jugular veins, on the whole, deserves more attention than it is usually given. Circulatory failure due to peripheral shock can immediately be recognized by the empty jugular veins. In cardiac failure the veins are engorged, indicating increased venous pressure. Heart block can frequently be diagnosed by correlating the venous pulsations with the arterial pulse. An abnormal, that is, systolic pulsation of the jugular veins can yield important diagnostic clues. It occurs in several conditions:

1. In tricuspid regurgitation.

2. If the contraction of the auricle coincides with the ventricular systole. In this case the auricle is prevented from emptying its content into the ventricle and throws it backwards into the veins. This is the case (a) in auriculoventricular nodal rhythm; (b) in tachycardia of such a degree that the socalled critical frequency of about 180 is reached; if the auriculoventricular conduction time is prolonged the tachycardia may be far less severe in order to bring about a coincidence of auricular beats with the delayed and not yet complete ventricular systoles.

3. If there are no efficient contractions of the auricles due either to fibrillation or to overdistention. In this case there is no auricular diastole either, nor suction of the venous blood during the ventricular systole, and therefore no systolic depression of the veins. A diastolic collapse of the jugular veins occurs, however, because the blood is sucked from the auricles into the ventricles. As a matter of fact, this mechanism is a diastolic collapse rather than a systolic pulse.

Dilated pulsating subcutaneous arteries, mostly in the interscapular region, should not be overlooked as they represent an important sign of coarctation of the aorta.

It seems hardly justified to enumerate among neglected points clubbed fingers or Osler's digital nodes, the latter being due to embolism of the small digital arteries in bacterial endocarditis. It is, however, worth mentioning that excessive axillary and palmar perspiration of a "heart patient" may be highly suggestive of a neurotic condition. No matter whether the final diagnosis will be neurocirculatory asthenia, soldier's heart or an organic heart disease, such a localized hyperhidrosis indicates a nervous, hyperirritable personality.

2. Percussion

It requires years of experience and thorough checking by fluoroscopy in order to obtain reliable information about the heart by percussion. This fact, however, must by no means discourage its routine use. It is not only the size of the heart but also the shape of its silhouette that can be recognized by percussion. This can reveal whether an aortic or a mitral configuration of the heart is present, that is, whether the angle between the enlarged left ventricle and the auricle is very marked, or whether there is no angle at all and the left border of the heart appears as a straight line or is even bulging in the area of the left auricle and pulmonary artery. Enlargement of the area of heart dullness does not mean necessarily enlargement of the heart. It may be due to pericardial effusion and in this case it will markedly change in shape by shifting from recumbent to sitting position. It may also be caused by an elevated diaphragm. Dullness over the basis of the left lung can be produced by pericardial effusion or a high grade enlargement of the heart.

3. Auscultation

There is no need to mention that a systolic murmur heard over the pulmonary or aortic area is far more frequently of functional (accidental) character than due to a valvular disease. Without being associated with a palpable thrill or the characteristic pulsus tardus and parvus it does not justify the diagnosis—stenosis of the aortic ostium. The systolic murmur over the pulmonary artery and some accentuation of the second pulmonic sound are frequent findings in normal children and may, if observed in certain asthenic and weakly adults, be considered as persistence of an infantile state. An accidental systolic murmur over the aortic area is not only to be found in aortitis, atherosclerosis or hypertension but may also be caused by an

elevated diaphragm with consequent spreading of the aortic loop. In such a case the second aortic tone may sound somewhat ringing and musical, probably because of the resonance of the meteoristic abdomen. The differentiation between such a state and an organic disease of the aorta—either syphilitic or atherosclerotic in nature—is all the more difficult as the aorta appears to be dilated and the heart enlarged to the left if only an AP x ray view is taken. In patients with arterial hypertension the diagnosis of syphilitic aortitis as complicating second disease is frequently impossible. In syphilis of the aorta the accentuated second aortic sound is usually ringing and musical, in arterial hypertension it is more frequently snapping and the second pulmonic sound is also accentuated.

It is common knowledge that an accidental systolic murmur is likely to be diminished or to disappear on deep inspiration and to be heard in a circumscribed area only as contrasted with an organic systolic murmur. If a coronary thrombosis is followed by the appearance of a loud systolic murmur in the precordial area which had not been present before the attack, the possibility of perforation of the ventricular septum due to ischemic necrosis should be thought of. A systolic murmur, accentuated second pulmonic sound and enlarged heart occurring in a Negro are not necessarily signs of a rheumatic mitral lesion and should always arouse the suspicion of sickle-cell disease. This differential diagnosis may be particularly difficult with patients who run a low grade fever, complain of "rheumatic pain", and do not exhibit marked anemia. Sickle-cell disease can imitate rheumatic heart disease by causing capillary stasis and multiple thromboses in the lungs resulting in an overstrain of the right heart.

It is known that mitral stenosis may be dumb, that is, that it may not cause any murmurs at all, particularly if it is a high grade button-hole stenosis. A presystolic murmur of mitral stenosis is sometimes to be heard only in left side decubitus of the patient. Aortic murmurs or thrills are more likely to be found if the patient is standing or bending forward.

4. Palpation

A truly neglected point in physical diagnosis is F. M. Pottenger's "slight touch palpation". It requires training and practice but it pays; especially if the borders of the heart dullness have to be determined in a noisy room and if slight touch palpation is used to check the results of percussion. I used to encourage my students in Vienna to practice this technique but did not see anybody using it here. And Pottenger is living in this community of ours!

Displacement of the apex beat laterad only is suggestive of an enlargement of the right heart; displacement of a vigorous, forceful and resistent apical thrust laterad and caudad indicates hypertrophy of the left ventricle. Second sounds are palpable only if the pressure in the respective circuit is considerably increased. That is the case in arterial hypertension of varied origin and in mitral stenosis, respectively. Palpable pulsation in the jugular notch suggests dilatation or elongation of the aorta due to either arteriosclerosis, hypertension or lues. Systolic laryngeal tug, known as Oliver-Cardarelli's sign, occurs in both aortic aneurysm and fibrous adhesive mediastinopericarditis.

Forceful, expansile and diffuse systolic pulsation of the enlarged liver is caused by the same mechanism that is operative in producing a visible systolic pulsation of the veins of the neck. It is a particularly valuable sign of tricuspid incompetency.

Palpation of the radial pulse sometimes yields results that are frequently neglected. Inequality of the pulse on both sides may be due to congenital inequality of the arterial caliber; it may, however, result also from a narrowing of the mouth of the subclavian artery caused by syphilitic aortitis. If tachycardia is found in a nonfebrile standing patient it should always be checked in the recumbent position. Tachycardia due to hyperthyroidism is not likely to subside considerably if the patient lies down, in contrast with the marked slowing of the pulse rate with patients having primary nervous hyperirritability, usually labeled as neurocirculatory asthenia, effort syndrome, soldier's heart, and so forth. In this latter condition a marked retardation of the pulse can be observed if the patient stoops with stretched knees as much as he can or if a moderate pressure is exerted upon his closed eye-balls. These signs are known as Erben's and Aschner-Dagnini's sign, respectively, and deserve far more attention than they usually are given. A marked respiratory arrhythmia has the same significance as these signs have. If such a variation of the pulse rate with the respiration is to be found it can be assumed that the patient is of a nervous type and that his tachycardia is hardly due to a myocardial lesion.

From such a respiratory arrhythmia is to be distinguished what I called respiratory inequality of the pulse. The pulse wave may become considerably lower or even disappear completely during deep inspiration. Such a respiratory inequality of the pulse may or may not be associated with respiratory arrhythmia. The mechanism and clinical significance can be different.

1. The negative intrathoracic pressure becomes more negative during inspiration. This renders the systolic contraction of the heart more difficult and may result in a diminution of the stroke volume during inspiration, if the heart muscle is damaged and weakened, or if the passage of the air through the respiratory tract is impaired and an abnormal inspiratory suction is exerted on the heart. In some cases of a constitutionally hypoplastic dropping heart, which is not properly supported by the diaphragm, such a diminution of cardiac movements during inspiration can be seen on fluoroscopic examination.

2. There are rare cases of respiratory inequality of the pulse in which the inspiratory lift of the chest leads to a partial compression of the subclavian artery between the clavicle and the first rib. This is proved by the fact that the inspiratory diminution of the pulse wave in such cases disappears if the shoulders are raised. Anatomical variations, such as a poor development of the sulcus arteriæ subclaviæ of the first rib, or the presence of an abnormal musculus scalenus minimus inserted at the pleural dome, have been assumed to explain this phenomenon.

3. The best known variety of respiratory inequality of the pulse is the one encountered in adhesive mediastinopericarditis. It has been described as "pulsus paradoxus", although it is by no means paradoxical. Fibrous adhesions between the heart and both the diaphragm and chest wall impair the systolic contraction of the heart during inspiration, and therefore diminish

the stroke volume and the pulse wave. In this type of respiratory inequality of the pulse the largest pulse waves occur during the breathing pause (Wenckebach).

It has been shown by my former associate, M. Schur, that sphygmographic registration of the radial pulse under moderate compression of the brachial artery is an excellent method to study respiratory inequality of the pulse because it makes this inequality far more marked. With this procedure it has been demonstrated that the respiratory inequality of the pulse is actually a normal phenomenon. Only if it becomes perceptible by simple palpation of the radial artery, or if the pulse wave disappears almost completely on inspiration has it clinical significance.

Finally two more frequently neglected points may be mentioned. In taking the systolic blood pressure in hypertensive patients the palpatory method should always be used in addition to the auscultatory method. This will protect against being mislead by the socalled auscultatory gap. On deflation of the cuff from the systolic level the vascular tones may not be audible for a certain range of pressure. If the manometer is not raised high enough the true blood pressure may be measured too low by such a procedure.

The most important contribution of the radiologist to the diagnosis of hyperthyroidism is the statement of very active pulsations and lively contractions of the heart. This, however, can be made by fluoroscopy only. An x ray plate of the chest in such a condition is mostly without any diagnostic value.

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CLINICAL ANALYSIS OF FIFTY CASES OF DIABETIC RETINITIS

With Reference to Venular and Capillary Pathology

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The assumption that diabetic retinitis is caused by arteriosclerosis has proved a stumbling block and dogmatic barrier to complete understanding of the etiology of retinal manifestation. Some years ago, I became interested in changes in retinal veins in local and general disease (1). My main conclusions, which did not then attract much attention, were as follows:

Retinal veins showed dilatation and engorgement in active iritis and uveal disease, also, in pneumonia and active pulmonary tuberculosis, leucemia, diabetes, and some cases of nonhypertensive arteriosclerosis. I have since found that there are actual pathological changes in the veins of diabetics, and sometimes in senile arteriosclerotics. These changes seemed to extend into the postcapillary venules and capillaries. In previous publications (2, 3) these changes were described. Sections for pathological study were made from posterior segments of the eye of diabetic patients. Cases specially selected were those showing, ophthalmoscopically, only slight changes in the arteries with punctate retinitis, or with engorged veins with or without large hemorrhages.

Since my report, O'Brien and Alden (4), in a clinical contribution, described changes which coincided with my findings. Gibson and Smith (7), also found phlebosclerosis as a definite clinical entity commonly seen in diabetics, frequently out of proportion to the severity of diabetes and arteriosclerosis.

To illustrate the dominance of these changes, I have selected fifty cases[1] of diabetic retinitis, which are herein reported, with clinical, laboratory, and ophthalmoscopic data.

Based on previous pathological study, analysis of these cases is summarized as follows:

Summary of Findings

1. Severity of retinitis is frequently out of proportion to severity of diabetes.
2. Diabetes may exist a long time without retinitis.
3. Complete control of diabetes does not arrest the tendency to thrombosis or hemorrhage.
4. Some severe cases of diabetes show only mild retinitis with small hemorrhages.
5. Large hemorrhages coupled with engorged and sacculated veins are not uncommon in fully controlled diabetics.
6. Venular and capillary pathology offers the most logical explanation of fundus pictures, because the advanced retinal changes are so frequently out of proportion to existing arterial or renal disease.
7. My impression, obtained from observation of early cases, is that the first sign of retinitis is not lipoid exudate but petechial capillary hemorrhage, or thrombosis of precapillary vein.
8. Prothrombin evaluation of twelve cases shows no variation from normal.

What is the practical value of this analysis? While the fundus picture does not always represent the degree of severity of diabetes, the absence of changes in retinal veins as well as arteries, is a favorable prognostic sign.

The combination of capillary hemorrhages and small white spots in the presence of good retinal veins is also favorable. Engorged retinal veins indicate an impending tendency to thrombosis and large hemorrhages into the retina and vitreous chamber. This may mean ultimate loss of vision without or with secondary glaucoma.

If a patient has cataract, the presence of venous changes, in either the affected or the other eye, renders the eye unfavorable for operation because of the probability of postoperative hemorrhage. The patient or family should be warned, before the operation is attempted.

Case Histories

CASE 1.—Hospital No. 7705. The patient was a woman, aged twenty-three years. Diagnosis: diabetes for fourteen years; the patient died in 1938. Sixty units of insulin had been given daily from 1932. Urine, four percent glucose; blood pressure, 120/76; blood sugar, 445-492 mgm. percent; urea nitrogen, 27 mgm. percent. Fundi showed hemorrhagic retinitis.

Postmortem report: Generalized atherosclerosis; valvular heart involvement; kidney showed some gross scarring but no minute granularity; retinal arteries and veins sclerotic, capillaries markedly hyalinized.

[1]Cases reported are from the medical service of Montefiore Hospital, and private practice.

Case 2.—Hospital No. 7625. The patient was a man aged sixty years. Diagnosis: hypertensive heart disease; diabetes for three years. Blood pressure, 220/110, 244/118; blood sugar, 177 to normal. Fundi: moderate hypertensive change with attenuation and constriction of some branches; retinal veins not engorged; a few small retinal hemorrhages; discs not edematous.

Postmortem report: Chronic glomerular nephritis; heart, 385 gms.; general atherosclerosis; kidney markedly granular.

Case 3.—Hospital No. 7659. The patient was a man, aged forty-seven years. Diagnosis: diabetes, controlled by insulin; chronic glomerular nephritis. Blood pressure, 196/100; urea nitrogen, 47-56; cholesterol, 237; blood sugar, 110-150 mgm. percent. Fundi: high myopia, O.D.; retina and optic nerve otherwise normal. O.S., optic atrophy due to blocking of central retinal artery. No retinitis; retinal veins normal.

Postmortem examination: Chronic pulmonary tuberculosis, cardiac hypertrophy 500 gm.; arteriosclerosis; finely granular kidney. Retinal arteries: moderate hyalinization of media; veins normal; capillaries normal in O.D.

Case 4.—S. E., male, aged sixty-five years. Diagnosis: diabetes for ten years, under control by diet and insulin. Blood pressure, 130/80; urine, sugar 0 to trace, albumen 0; blood sugar, 200 to normal; prothrombin time fifteen to twenty seconds (normal). Fundi: small diabetic white spots; punctate hemorrhages, and moderate sized thrombotic hemorrhages, which seemed to recur even while the blood sugar was normal; retinal veins slightly engorged; retinal arteries showed a slight degree of senile sclerosis.

Case 5.—A. A., male, aged eighty-two years. Diagnosis: diabetes for twenty years, treated by diet. Blood pressure, normal; urine, sugar 1 percent, albumen trace; blood sugar, 200 mgm. percent. Fundi: retinal arteries of good caliber with senile sclerosis; retinal veins slightly engorged; retina studded with small white spots and capillary hemorrhages; a few larger hemorrhages apparently due to thrombosis of small venules.

Case 6.—Hospital No. 95989. F. G., female, aged sixty-five years; admitted on March 30, 1941. Diagnosis: diabetes and diabetic gangrene; peripheral vascular disease; diabetes was first recognized on November 26, 1939. Blood pressure, 160/80 to 150/64; urine, sugar 4 percent to 0, albumen negative; blood sugar, 150 to 222; prothrombin time normal. Fundi: slight hypertensive changes in retinal arteries. O. S., massive circinate exudate around the macula; O. D., no exudate; veins normal; no hemorrhages.

Case 7.—Hospital No. 95394. I. L., female, aged sixty-three years, admitted on February 8, 1941. Diagnosis: diabetes and chronic bronchitis. Blood pressure, normal; urine, sugar 0 to 2 percent, controlled by diet, albumen negative; blood sugar average, 125 mgm. percent; prothrombin time normal. Fundi: O. D., high myopia, no retinitis, retinal veins normal, retinal arteries normal. O. S., anophthalmos.

Case 8.—Hospital No. 91128. S. S., male, aged sixty-six years. Diagnosis: diabetic gangrene. Blood pressure, 100/70—120/80; urine specific gravity, 1010; blood sugar, normal. Urine, sugar negative, albumen 1 plus. Fundi: retinal arteries showed slight hypertensive changes; no hemorrhages or exudates.

Case 9.—Hospital No. 95367. I. L., female, aged sixty-one years, admitted on January 17, 1941. Diagnosis: diabetes, diabetic gangrene, myocarditis. The patient was at the Morrisania Hospital, October 1936; remained well until 1940. Blood pressure, 130/80; urine, specific gravity 1005, albumen 2 plus, sugar 3 plus; blood sugar average, 248 mgm. percent. O. U., immature cataract. Fundi: O. D., retinal arteries slightly attenuated, veins normal, no retinitis. O. S., not clear.

Case 10.—Hospital No. 94528. Male, aged fifty-six years. Diagnosis: essential hypertension, heart disease, diabetes. Blood pressure, 190/140; urine, albumen 2 plus, sugar 0 to trace; blood sugar, 92 mgm. percent to 117 mgm. percent; prothrombin time normal. Fundi: O. D., myopia –10. dioptres; retinal arteries and veins normal; a few small hemorrhages. O. S., myopia –1. dioptre; retinal arteries mildly hypertensive; a few small hemorrhages apparently of capillary origin.

Case 11.—Hospital No. 95980. I. C., female, aged fifty-two, admitted on March 30, 1941. Diagnosis: diabetes and diabetic gangrene. The patient's leg had been amputated on January 8, 1935. Blood pressure, normal. There was a history of sugar in the urine. Blood sugar, 194 mgm. percent; prothrombin time normal. Fundi: retinal arteries and veins normal; no retinitis or hemorrhages.

Case 12.—Hospital No. 73287. S. S., male, aged sixty years, admitted on November 17, 1933. Diagnosis: diabetes. Blood pressure, 120/60; urine sugar, 2 to 4 percent; blood sugar, 200 to 300 mgm. percent. Fundi: retinal arteries, slight senile sclerosis; retinal veins normal; no retinitis. Prothrombin time normal.

Case 13.—Hospital No. 95622. E. F., female, aged sixty-five years. Diagnosis: diabetes. Blood pressure normal; urine negative; blood sugar, 281 mgm. percent. Fundi: retinal arteries and veins normal; no retinitis.

Case 14.—H. R., male, aged sixty-five years. Diagnosis: hypertensive sclerosis; coronary disease; diabetes. Blood pressure, 220/140 to 192/110; urine, specific gravity 1030, albumen 0, sugar 0 to trace; blood sugar, 148 mgm. percent. Fundi: senile arteriosclerosis with only slight hypertensive changes; no retinitis; retinal veins normal. This patient was evidently chiefly a cardiac.

Case 15.—Hospital No. 94347. B. F., male, aged sixty years. Diagnosis: hypertension; diabetes. Blood pressure, 210/112 to normal; urine, albumen trace, sugar one-half percent to trace; blood sugar average, 200 mgm. percent. Fundi: O. D., high myopia; retinal veins engorged; numerous punctate hemorrhages; retinal arteries slightly hypertensive. O. S., retinal veins markedly engorged; numerous punctate and larger hemorrhages. Prothrombin time normal.

Case 16.—Hospital No. 97557, female, aged fifty-three years. Diagnosis: diabetes, hypertensive heart disease. Blood pressure, 220/110; urine sugar, 3 plus to 0; blood sugar 186 mgm. percent. Fundi: hypertensive changes; engorged veins; large hemorrhages in retina and vitreous; retinitis proliferans. Prothrombin time normal.

Case 17.—Hospital No. 97859. H. K., female, aged seventy-six years. Diagnosis: diabetes. Blood pressure, 150/80 to 190/90; urine, albumen 0, sugar 4 plus to

trace. Blood sugar, 202; blood Wassermann, two plus to four plus. Fundi: retinal arteries showed moderate hypertensive changes; retinal veins markedly engorged; diffuse hemorrhages and exudates; some hemorrhages in vitreous. Prothrombin time normal.

Case 18.—Hospital No. 96819. A. R., female, aged fifty years. Diagnosis: chronic pulmonary tuberculosis; diabetes. Blood pressure, 138/84; urine, albumen 0, sugar two plus percent; blood sugar, 247 to 207. Fundi: retinal veins engorged; numerous small thrombotic veins and hemorrhages; secondary arteriosclerosis; some massive exudate. Prothrombin time normal.

Case 19.—Hospital No. 82222. R. S., female, aged seventy-three years. Diagnosis: diabetes; hypertension; cardiac hypertrophy. Blood pressure, 232/96; urine sugar, 1 to 2 plus; blood sugar, 154 to 242; urea nitrogen, 45 to 32. O. S., anophthalmos. Fundus: O. D., retinal arteries moderately hypertensive, good caliber; a few diabetic spots; mascular degeneration; no hemorrhages. Prothrombin time normal.

Case 20.—Hospital No. 88836. B. D., female, aged thirty years. Diagnosis: diabetes. Blood pressure, normal; urine, albumen 0 to trace, sugar 0; blood sugar, 60 to 185, to 231 mgm. percent. Fundi: normal. Prothrombin time normal.

Case 21.—Hospital No. 94439. M. E., male, aged seventy-six years. Diagnosis: diabetes. Blood pressure, 190/110; urine, albumen one to two plus, sugar trace to three plus; blood sugar, 155 to 200; urea nitrogen, 76. Fundi: retinal arteries markedly attenuated; disc showed partial atrophy; veins normal; no hemorrhages or exudates.

Case 22.—Hospital No. 98001. I. G., male, aged sixty-four years. Diagnosis: arteriosclerotic heart disease. Blood pressure, 140/84; urine, albumen 0, sugar trace to three plus; blood sugar, 180 to 221. Fundi: very mild diabetic retinitis around macula; retinal arteries moderately hypertensive; retinal veins normal. Prothrombin time normal.

Case 23.—Hospital No. 98073. G. B., female, aged fifty-four years. Diagnosis: diabetes; hypertension. Blood pressure 130/80; urine, albumen 0, sugar four percent. Fundi: retinal arteries markedly hypertensive and sclerotic; retinal veins normal; discs appear suggestive of antecedent edema; macula showed a few diabetic white spots. Prothrombin time normal.

Case 24.—A. B., female, aged sixty years, first seen February 19, 1942. Diagnosis: diabetes; hypertension. Blood pressure, 210/130; urine, albumen 0 to trace, sugar two percent; blood sugar, 250 mgm. percent. Lost vision in right eye ten days ago. Fundi: O. D., no fundus reflex: hemorrhage in vitreous. O. S. diabetic retinitis; small and moderate sized hemorrhages; retinal arteries good caliber, but hypertensive.

Case 25.—A. F., female, aged fifty-five years. Diagnosis: diabetes. Blood pressure normal. The patient was under treatment with diet and insulin. The urine generally sugar free. Fundi: O. D., retinal arteries showed only mild senile sclerosis; a few punctate white spots around the macula. O. S., postcapillary hemorrhage near disc; a few diabetic spots; retinal veins normal.

Case 26.—P. B., male, aged fifty-six years, first seen December 1, 1941. Diagnosis: diabetes, under control by diet and insulin. Blood pressure, normal; urine normal; blood sugar, 130 to 180 mgm. percent. Fundi: O. D., very moderate diabetic change in macula; retinal veins slightly engorged. O. S., thrombosis of retinal veins with engorgement and massive hemorrhages.

Case 27.—B. B., female, aged seventy-one years. Diagnosis: diabetes and hypertension. Blood pressure, 170/90 to 190/100; urine, usually sugar free; blood sugar, 120 to 185. Diabetes of four years' duration, under control. Fundi: retinal arteries, senile sclerosis; veins normal; punctate hemorrhages in paramacular region, probably of capillary origin.

Case 28.—L. L., female, aged seventy-five years, seen on March 28, 1940. Diagnosis: diabetes of fifteen years' duration, under control by diet; hypertension. Blood pressure, 170/100; urine sugar, trace. March 8, 1940. Fundi: retinal arteries show slight hypertensive changes; good caliber; retinal veins normal; punctate diabetic retinitis in macular region.

Case 29.—S. M., female, aged fifty-nine years. Diagnosis: diabetes for twenty years, under control with diet and insulin. Blood pressure normal; urine sugar, 0 to trace; blood sugar, 150 to 200. February 10, 1942. O. D., immature cataract; O. S., incipient cataract. Fundi: retinal vessels normal. O. S., a few capillary hemorrhages and exudates.

Case 30.—F. D., female, aged seventy years. Diagnosis: diabetes, cerebral arteriosclerosis; mild hypertension. Blood pressure, 160/90; urine normal; blood sugar, 130 to 180 mgm. percent. Diabetes under control for seven years with twenty units of insulin. May 3, 1939. Fundi: retinal arteries, slight senile sclerosis; veins normal; moderate retinitis; no hemorrhages.

Case 31.—R. J., female, aged forty-nine years. Diagnosis: diabetes, hypertension; menopausal symptoms; angina pectoris. Diabetes partly controlled with fifteen units of insulin for eleven years. Blood pressure, 200/100; urine sugar, two to three percent; blood sugar, 250 to 400. Fundi (April 10, 1937): retinal arteries show slight hypertensive changes; no retinitis.

Case 32.—H. L., female, aged sixty. Diagnosis: generalized atherosclerosis; diabetes for ten years, controlled without insulin. Blood pressure, 130/80; urine sugar, 0 to 1 plus; blood sugar, 200 to 250. January 17, 1936: O. D., immature cataract; O. S., incipient cataract. Fundi: retinal vessels normal, with only slight hypertensive changes; no retinitis.

Case 33.—E. P., female, aged seventy-three years. Diagnosis: diabetes; generalized arteriosclerosis. Diabetes controlled for twenty years with diet and eighteen units of insulin per day. Blood pressure 180/70; urine, albumen 0, sugar 0 to trace; blood sugar, 150 to 320. January 4, 1935: Fundi: capillary hemorrhages in macular region.

Case 34.—B. R., female, aged sixty years. Diagnosis: essential hypertension; coronary sclerosis, cerebral sclerosis. Blood pressure, 220/120; urine, albumen 0 to trace, sugar 0 to 1½ percent; blood sugar, 180 to 250 mgm. percent. October 16, 1936: Fundi: retinal arteries hypertensive; veins normal; well developed diabetic retinitis; no hemorrhages.

Case 35.—J. R., male, aged sixty-four years. Diagnosis: mild diabetes; generalized arteriosclerosis; healed pulmonary tuberculosis. Blood pressure, 120/80; urine negative; blood sugar, 100 to 150. January 2, 1929: Fundi: sclerosis of chorioidal vessel; retinal arteries, slight senile sclerosis; retinal veins normal; no retinitis.

(*To be continued*)

VITAMIN A IN THE TREATMENT OF ARTERIAL HYPERTENSION

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In October 1939, in collaboration with J. Govea Peña, I published in *Cronica Medico Quirurgica* (1), Havana, a primary report on the use of large doses of vitamin A in the treatment of essential hypertension. This report was on a single case of recurrent urolithiasis and vitamin A was prescribed for this condition. This patient also had essential hypertension with an average blood pressure reading of 220/120 which had resisted all of the usual methods of treatment. Within a few days this patient's blood pressure fell to an average reading of 150/90 and the general symptons associated with this hypertension disappeared. For purposes of experimental control, the vitamin A therapy was suspended, and the blood pressure rose again to its former reading. When the vitamin A treatment was renewed, however, the blood pressure promptly dropped. These striking findings presented the possibility of the corrective action of vitamin A on essential hypertension and in a small series of cases of essential hypertension the patients were given the same treatment.

In the following year, the results in this group of cases were published and since that time several articles have been published both in Cuba (2) and abroad (3) in which we demonstrated that vitamin A had indeed a manifest hypotensive effect in the majority of our cases in this series. Since that time, Wakerlin and Moss (4) have reported a reduction of blood pressure in experimental dogs whose blood pressure was artificially increased by partial occlusion of the renal arteries after the method of Goldblatt (5) on similar large doses of vitamin A. They noted that there were no toxic effects and that the chemistry and weight of the dogs remained constant and normal throughout the experiment. They reiterate our observation that the mode of action at present is not completely understood, but it may be assumed that there is some relation between hypertension and vitamin A deficiency.

Herrin and Nichols (6), however, conclude that vitamin A is involved in the physiology of the kidney and is responsible for at least a part of its excretory capacity. In dogs, supplementing a diet presumably sufficient in vitamin A with fifty thousand units of vitamin A daily, there resulted a forty-one to ninety-four percent increase in urea clearance. The maximum increase occurred after ninety-six days and remained forty-four days after the supplement was withdrawn.

In connection with this seemingly large dosage of vitamin A there has been general acceptance when used in other therapeutic indications, and a comment in Queries and Minor Notes in the *J. A. M. A.* (7) indicates that there is no important reason why large doses of vitamin A may not be given orally, daily, for an indefinite period.

Up to the present we have used large doses of vitamin A in one hundred cases of essential hypertension and our results may be classified as follows:

Group I: Fall of pressure and disappearance of symptoms, twenty-five percent.

Group II: Partial improvement, fifty percent.

Group III: No improvement, twenty-five percent.

The results thus far have, therefore, been definitely encouraging and should provide an impetus for further study of the subject; twenty-five percent of the cases were completely successful and in fifty percent there was definite though not complete improvement. Many of these patients had received the classical therapeutic measures without result. In Group II, comprising those with partial improvement, some of them, whose blood pressure fell only slightly; showed extraordinary improvement in their subjective symptoms, which we feel was not due to suggestion. Some of the patients have been under this treatment for two years and have shown continued satisfactory results with no adverse symptoms from this dosage of vitamin A.

Essential hypertension is, of course, most likely to react favorably to the vitamin A therapy, but organic disease is no contraindication. Good results have been observed in a few cases of arteriosclerosis and renal sclerosis.

The mechanism of the action of vitamin A in arterial hypertension has not yet been explained. Various theories, such as thyroid antagonism, pancreatic stimulation, the effect on the sympathetic nervous system or on the lining of the urogenital tract, have been discussed, but no proof has yet been presented for any of them. The determination of carotene and vitamin A in the blood shows universally low values in our series which was brought out in an article which we wrote in collaboration with Garcia Romeu and Beato Nuñez (8). In cooperation with J. Pujol (9) we showed a reduction of from ten to thirty millimeters of mercury within three hours after the injection of one cc. of olive oil containing one hundred thousand international units of vitamin A. We think, therefore, that essential hypertension in some instances is the result of chronic hypovitaminosis A, although arterial hypertension has not been demonstrated in animals when a deficiency of vitamin A has been produced.

We have administered the vitamin A both orally and parenterally. One hundred thousand units in olive oil, intramuscularly or subcutaneously, are usually rather painful but we have encountered no suppuration. By mouth, two hundred thousand units[1] a day may occasionally cause a slight regurgitation which usually disappears with continued treatment. In some of the cases, three hundred thousand international units a day have been administered for three or four months with any ill effects. When we have obtained the fall of blood pressure desired the daily dosage of vitamin A is reduced to that amount which permits maintenance of the optimal blood pressure for the patient. This maintenance dosage has varied between twenty-five thousand and one hundred thousand units per day. Although many of our cases have shown almost immediate results, others have needed several

[1]Nion A capsules, which were supplied by the Nion Corporation, Los Angeles, Calif.

weeks treatment before improvement is noted. In some of the cases we have been able to discontinue treatment without recurrence while others have needed continued vitamin A therapy.

In our clinical work vitamin A therapy has been the only medication used, but it is reasonable that other hygienic, mental and medicinal measures should also be used. At the present time our investigations are showing a number of different divergent lines; namely, the dosage of vitamin A during treatment and for the maintenance of improvement; the relation between vitamin A administration and its concentration in the blood; the relationship of arterial sclerosis and other associated lesions to hypovitaminosis A, and the effect of vitamin A on arterial structure. Some of our cases with renal sclerosis have responded favorably to this treatment.

We believe we were the first to point out the value of large doses of vitamin A in hypertension. Although little is known concerning the mechanism of vitamin A, we found in almost all of our cases, a low level of vitamin A in the blood and that the majority of our patients responded to large doses of vitamin A.

It is not possible at this time to state how long treatment should be continued before improvement may be observed. Some patients showed improvement within six or eight weeks, while with others the treatment had to be continued over a longer period. Regardless of the dosage and length of treatment, this form of therapy is harmless and may be used in conjunction with any other therapy suited to the individual needs of the patient.

Summary

1. The treatment of essential hypertension with large doses of vitamin A has been successful in twenty-five percent and satisfactory in seventy-five percent of the cases.

2. The mechanism of action of vitamin A in essential hypertension is as yet not thoroughly understood.

3. Most of our cases of hypertension showed a level of vitamin A in the blood lower than normal.

4. The injection of one hundred thousand international units of vitamin A reduces the pressure by ten to thirty millimeters of mercury in from one to three hours.

5. Vitamin A in large doses, even over a period of two years, has been found to be without any harmful results to the patient.

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EMERGENCIES WORTH REVIEWING*

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In these days of total and ruthless war, the physician must always be on the alert for any emergency that may possibly arise. A review of emergencies should be a topic at staff meetings and should be published in medical journals. A physician who is emergency conscious will make fewer mistakes, will save more lives and reduce unnecessary suffering.

An *emergency* may be defined as a sudden occasion; a pressing necessity; a crisis; or an unforseen combination of circumstances which calls for immediate action. The degree of an emergency may be mild, moderate or severe. There may be injury to soft tissues, hard tissues or both.

Cardiac Emergencies

Congestive heart failure.—Acute congestive heart failure is one of the most commonly seen conditions demanding emergency treatment.

In left ventricular failure, dyspnea, orthopnea and air hunger appear and increase in severity with the degree of failure. The associated pulmonary congestion may give rise to a productive cough and to hemoptysis. Patients with failure of the left side of the heart are subject to alarming and not infrequently fatal attacks of acute paroxysmal dyspnea. The attacks, which are usually nocturnal, are marked by extreme dyspnea and a cough which is productive of profuse frothy blood-tinged sputum. The blood pressure is at first elevated but later falls. As the pulmonary edema becomes acute, circulatory collapse occurs, accompanied by pallor and cyanosis, marked perspiration and a rapid, feeble radial pulse. If treatment is delayed, death may ensue. The most important emergency measure is the subcutaneous administration of morphine sulfate, one-fourth grain, repeated in fifteen minutes if relief has not been obtained. If the morphine is not effective in abolishing the attack, aminophyllin, seven and one-half grains in twenty cc. of physiological solution of sodium chloride, should be administered intravenously, slowly during a five minute period. Clinical studies have shown that the drug causes a decline in the intrathecal and venous pressure with a subsequent diminishing of the dyspnea. Oxygen when available should be administered promptly. Phlebotomy of from three hundred to five hundred cc. of venous blood is frequently followed by striking improvement.

Acute coronary occlusion with myocardial infarction.—The onset of the attack usually occurs while the patient is at rest and is characterized by an agonizing,

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crushing or squeezing sensation lasting often six to twelve hours. This is in contradistinction to angina pectoris in which the attack occurs during exercise and the duration is in terms of minutes rather than hours. If the pain lasts more than fifteen minutes it is not angina pectoris. The severe and oppressive pain of an acute coronary occlusion is usually located behind the sternum, across the chest between the nipples, or in the epigastrium, and may radiate into the neck and down the arms. The patient, who is usually middle-aged or older, is ashen color. Other symptoms are falling blood pressure, profuse perspiration, sometimes vomiting and abdominal distention with so much epigastric pain that an acute abdominal emergency might be thought of.

On examination of the heart a pericordial friction rub may be heard; the tones may be distant; new murmurs may be present. The earliest special examinations of diagnostic value are sedimentation rate (elevated), leucocyte count and electrocardiograms.

In the treatment of acute coronary occlusion, morphine sulfate, one-quarter to one-half grain, should be given hypodermically at once and repeated if necessary. If the attack is severe, put the patient in the oxygen tent, keep him at absolute bed rest and allow no bathroom privileges. Other therapy: If arrhythmia develops, use quinidine sulfate, three to six grains every five hours; if the patient suddenly becomes pulseless and unconscious, with ventricular tachycardia proved absent through auscultation of the heart, give 0.5 to 1.0 cc. adrenalin 1/1000 subcutaneously. One imperative "don't" is the use of nitroglycerine in this condition; its use here may cause sudden death.

Cerebral Trauma

Cerebral trauma varies from a localized bruise with punctate hemorrhages to extensive lacerations of the brain. The injuries by *contre-coup* may be as great as those at the point of impact. The extent of the injury of the skull is rarely an indication of the extent of the cerebral injury. The degree of coma, the state of the pulse, respiration and blood pressure, and the neurological signs furnish the only accurate evaluation of the cerebral injury. Even then it may be difficult to arrive at an accurate opinion, since a rapidly developing cerebral edema or intracranial hemorrhage may exaggerate the symptoms. If symptoms of a localized condition exist, an exploratory decompression may be required to eliminate the possibility of an intracranial hemorrhage. The symptoms resulting from cerebral edema are more or less diffuse; restlessness or coma may persist for hours and days without evidence of localized paralysis.

Arterial Embolism

A patient who had hitherto been known to suffer with rheumatic heart disease with stenosis of the mitral orifice developed an auricular fibrillation. Suddenly he experienced unbearable pain in the left thigh, leg, and toes with quickly supervening anesthesia, coldness, and pallor of the leg below the knee.

Here is an urgent medical, if not surgical, emergency. Delay of but a few hours in making a diagnosis may mean the death of the part, if not the patient. The patient should at once be hospitalized. Conservative treatment should at once be adopted to meet two indications; first, to relieve the immediate vascular spasm which is a most dangerous early factor, and second, to prevent coagulation of the blood column both proximal and distal to the obstruction. Later, measures to encourage the formation of collateral channels must be instituted.

To meet the first aim, paravertebral block with one percent novocain of the second, third and fourth lumbar roots should be performed on the side involved. This procedure should be done twice in thirty-six hours for three or four days. Next, papaverine hydrochloride, one grain, should be given intravenously every four hours until definite signs of circulatory reestablishment make their appearance.

To meet the second indication, dicoumarin may be combined with heparin so as to elevate prothrombin and coagulation times, respectively. Since dicoumarin requires about twenty-four hours before the prothrombin time shows an increase, heparin is administered concurrently with the drug. Excessive heat to the part is dangerous. Moderate cold is safe.

Patient in Coma

When studying the patient who is in coma, states George Hermann in a recent review of medical emergencies, or recovering from a syncopal seizure, an attempt should be made to elicit any history of premonitory symptoms. In many cases, however, it is necessary to rely solely on a general survey followed by cardiovascular and neurological examinations. The first inspection of the patient may reveal the presence of pallor, cyanosis, or flushing; evidences of trauma; odors of alcohol, acetone or poisons; and abnormal respirations. Cardiac examination of the comatose patient may bring to light signs of the greatest significance either by examination of the pulse, by auscultation, or determination of the blood pressure. A complete examination of the eyes, including the fundus, as well as inspection and examination of the extremities and reflexes, aids in reviewing the neurological situation.

Apoplexy or *cerebral hemorrhage* is perhaps the most common single cause of unconsciousness. Convulsions rarely occur except when a cortical artery is involved. The face is usually flushed, the pulse is slow, full, and tense. The blood pressure is increased. The eyeballs are fixed or deviated to the paralyzed side presenting the socalled conjugate deviation. The pupils are contracted and irresponsive to light, the mouth is drawn to one side and paralysis is usually present on the opposite side. The breathing may be of the Cheyne-Stokes type. Hemiparesis may be present, at first flaccid, and the deep reflexes are lessened, but within a few days rigidity sets in and the reflexes become more active and abnormal plantar reflexes appear. The coma may pass off in a few hours but it often lasts for days. It is rarely of short duration.

Cerebral embolism occurs most frequently in patients with acute endocarditis and valvulitis or chronic mitral stenosis but occasionally also after coronary occlusion. Syncope and coma result when the embolus is large, and convulsions likewise occur when the circulation in the cortex is interrupted. The blood pressure usually is not elevated greatly. There are no changes in the eye grounds unless a small embolus strikes the central artery of the retina. The finding of disease in

the heart, particularly a febrile condition, will make the diagnosis of cerebral embolism most likely.

But hypertensive encephalopathy and cerebral angiospasm are characterized by an elevation of blood pressure, and eye ground changes.

Diabetic acidosis is characterized by Kussmaul breathing, with an acetone odor, soft eyeballs, low blood pressure, and usually diacetic-acid, acetone and sugar in the urine. Whenever possible, chemical analysis of the blood should be made to ascertain the blood sugar level, carbon dioxide combining power, and nonprotein nitrogen. Hypoglycemia must be properly identified before irreparable damage is done by the injection of insulin.

Uremia is suspected, when there exist uriniferous odor of the breath, dry skin, and elevation of the blood pressure coupled with signs in the eye grounds of arterial disease. Blood chemistry studies reveal retention of nitrogenous waste products. These signs in the pregnant woman indicate *eclampsia.*

Meningitis presents classical symptoms and signs and can be classified as to etiology by study of the spinal fluid. Estivoautumnal *malaria* may occasionally confuse this picture until proper blood studies are performed.

Pneumonia may be severe enough to cause sudden unconsciousness but can be discovered by physical examination of the chest.

Coma is often the presenting symptom of *poisonings* and a differential diagnosis can be made only by examination of the stomach contents. In cases of lead poisoning observation of the blood for the presence of stippled cells is necessary.

Pulmonary Embolism

Occlusion of small or medium-sized branches of the pulmonary artery at times shows no symptoms. In other instances pulmonary embolism is followed by infarction and shock. The physical signs in the typical cases are those of consolidation, that is to say, a small area of dullness, usually at the base of the lung posteriorly or in the axillary region, over which vocal fremitus is increased, bronchial breathing is distinct and showers of fine crepitations on inspiration and expiration are usually heard.

Hampton and Wharton reported that in their series of cases of postoperative embolism fifty percent of the patients died within thirty minutes, twenty-five percent died between fifteen and twenty-four hours after the occlusion, and ten percent recovered. The clinical picture simulated that of myocardial infarction consisting of shock and heart failure.

When shock is the predominating influence the patient is pale, covered with profuse perspiration, and the pulse may be imperceptible. In other cases severe dyspnea, cyanosis, swelling of the neck veins, and enlargement of the liver point to failure of the right ventricle. Circulatory symptoms are produced to some extent by interference with the absorption of oxygen in the blood, but for the most part they arise from the fact that the emboli increase the resistance to the flow of blood through the lungs to such a degree that the right ventricle fails.

Treatment.—Many attacks of pulmonary embolism are mild and do not threaten the patient's life. Heparin is started intravenously at once and dicoumarin, likewise, is given immediately in doses of 200 to 300 mg.

A patient who has a mild attack has about one chance in five of having a subsequent fatal embolism. It is, therefore, necessary for clinicians and surgeons to be familiar with the protean clinical manifestations and the electrocardiographic pattern of pulmonary embolism if the minor forms are to be recognized and the later attacks prevented.

Even a mild attack should be considered a medical emergency. One-half grain of papaverine hydrochloride should be given intravenously, oxygen should be administered to combat anoxia, and intravenous injection of atropine is indicated.

Venous Air Embolism

In the case of venous air embolism, according to the answer to a recent query in the *Journal of the American Medical Association,* a characteristic hissing sound is heard, followed by a peculiar churning of the heart. This sound may scarcely be heard with a stethoscope but occasionally it can be heard at a considerable distance from the patient. When air enters the right side of the heart it is pressed, in the shape of foam or large bubbles, into the pulmonary artery. Death may occur through asphyxia just as in thromboembolism, or dyspnea, cyanosis and tightness of the chest develop, all of which may disappear if the air bubbles are not too obstructive. If the entrance of air is through the pulmonary veins following pleural punctures, pneumothorax or operations on the lung, the air embolus obstructs segments of the arterial tree. The tongue may show pallor; air bubbles can be seen in the retina. Petechial hemorrhages in the skin occur. Blindness, dizziness and convulsions may be present. The administration of one hundred percent of oxygen with a Boothby mask may save life or minimize permanent damage by absorbing the nitrogen bubbles from the vascular tree.

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The treatment of other emergencies will be discussed by the author in a later issue.

Editorials

Shipyard Conjunctivitis

Among the increasing number of problems which have confronted health officers and industrial physicians during recent months is that of epidemic keratoconjunctivitis, called by some "shipyard conjunctivitis". Last January some two thousand San Francisco welders and other shipyard workers were reported suffering from this particular ailment; it is still active on the West coast and other reports come from Schenectady and New York.

The disease produces only a slight temporary defect of vision, the ultimate prognosis of vision is good, but it is a mishap in war effort. The condition is typified by edema of the lids and conjunctivæ, followed by intense hyperemia and a slight discharge. According to a report by Hogan and Crawford, of San Francisco, the keratic spots, 0.5 to 1.5 mm. in diameter, develop within five to eight days. They lie in the superficial substantia propria, beneath Bowman's membrane, and last for two months to two years. The appearance and history of the disease suggest a relationship to Béal's form of conjunctivitis. Seventy-five percent of the conjunctival infections are unilateral. Early, the glassy edema of the conjunctiva is diagnostic, as are also involvement of the regional lymph apparatus, the lymphocytic type of conjunctival exudate, tiny petechial hemorrhages, pseudomembrane formation and the meager discharge.

The disease is probably caused by a virus, possibly of the herpes facialis group. According to German sources, keratoconjunctivitis, which has appeared in Germany in epidemic form since 1938, is readily transmissible; physicians and nurses often develop it. The opinion of German authors, that the disease is caused by diphtheria bacilli, has been declined by other German authors which found sometimes "pseudo-diphtheria bacilli". Murray Sanders of the department of bacteriology, College of Physicians and Surgeons, Columbia University, has described the disease as seen in New York as an acute follicular conjunctivitis with enlarged and sometimes painful preauricular lymph nodes. The results of bacteriological studies of conjunctival scrapings have been essentially negative. Experimental studies reported by Sanders suggest that a possible specific agent of the nature of a virus has been isolated. Treatments in use are eyewashes and applications to reduce swelling. F. J. Walter, San Diego, Calif., saw good results from the use of a four or five percent solution of sodium sulfathiazole sesquihydrate.

Information about "shipyard conjunctivitis" is not general as yet and apparently epidemic situations can develop insidiously in factories before the nature of the conjunctivitis in its potential seriousness is recognized. Dr. Sanders has been assigned by the Board for the Investigation of Epidemic Diseases in the U. S. Army to study this problem and to assist in the control of the disease. Dr. John R. Paul, director of the Commission on Neurotropic Virus Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, requests that if new outbreaks, or suspected outbreaks, of epidemic keratoconjunctivitis should occur, the disease so far is not reportable in this country, notification of this fact be made to Dr. Murray Sanders.

Industrial Accidents

We were greatly perturbed recently to hear a radio commentator say that the industrial accidents in this country were greater than those of either Germany or Japan. Then we found a little note, preceding a "Gas on Stomach" advertisement, stating that shipyard accidents taken an annual toll equal to the full time efforts of five thousand workers. This report comes from the Department of Labor which is cooperating with the Navy and Maritime Commission to prevent accidents in shipyards. The study, they asserted, showed that unsafe work practices were present in about ninety percent of the reported injuries.

The knowledge of this situation makes one shudder, and here we are talking only about shipyards. We recall having read a short time ago that casualties among coal miners were greater per capita than those on the battle field, and the foregoing statements concern only two industries. There has been much hullabaloo about absenteeism. The workers have been blamed for keeping away from their jobs for various reasons. The reasons given were mainly shirking or having a good time; but little has been said about a form of absenteeism caused by illness and accident.

There are extenuating circumstances that would show that the accident rates are higher than they should be, because of our having been plunged into various new industrial enterprises. We have not been building ships on a large scale for a long time. It is natural, therefore, that there would be a high rate of accidents for a time, among persons who are unaccustomed to this new occupation, especially when everything is being rushed ahead at full speed. Nevertheless, we feel that as much attention should be given to remedial measures which will prevent accidents as is given to absenteeism and the berating of workers for circumstances for which they may not be wholly responsible.

We have heard of many instances where there has been laxity in the enforcing of safety measures under the guise of the necessity of winning the war. We feel that this is grossly shortsighted and that everything possible should be done to maintain the health and welfare of labor. We firmly believe that this will heighten efficiency.

Surgery in Britain Twenty Years Ago

Sir James Berry, president of the British Royal Society of Medicine, in 1923, delivered an address in which he presented a review of the progress of surgery and the rise and fall of surgical operations up to that date. Sir James is one of the pioneers in thyroid surgery in Britain, and his address was blunt, outspoken, and much to the point. He stated that with the development of aseptic surgery, many of the greatest advances of modern operative surgery came into vogue, particularly in the methods of doing brain, thoracic, and abdominal surgery, which he said were so greatly improved that they held out a hope for perfection in the future.

The speaker drew attention to the obvious truth that many of the highly technical operations in the year 1923 depended for their success, not merely on skillful technique and strict asepsis, but demanded as well a thorough knowledge of the pathological conditions likely to be met with in their actual performance. This knowledge is more difficult to acquire and the lack of it may, by an error of judgment, easily lead to a fatal disaster. In support of this statement is a saying attributed to a leading French surgeon of the day: "I can teach my assistants *how* to operate in six months but to teach them *when* to operate takes twenty or thirty years." Again, we are not all Moynihans, Mayos, Harvey Cushings or Sargents and, therefore, we should not be too greatly impressed by the doings of such star performers who have gained knowledge and skill largely by the sweat of their brows.

Sir James emphasized the point that only by long and assiduous attendance at hospitals can young men see much of certain operations, those in which sepsis is present, for example, and thereby gain experience so essential. A tilt is made against the too frequent operations for appendicitis which occurred after the last war and the opinion was expressed that if there were less operating, there would be less mortality, and the operator should be a man of experience. The argument was made that all over Britain in 1923 large and dangerous operations were being undertaken by those whose qualifications for undertaking them consisted chiefly in a few years of practice of military surgery, the surgery of injuries, of injuries inflected for the most part upon young and previously healthy men.

The foregoing remarks from a really reliable and sound address showed how great progress in surgery had been made up to 1923, but, as the speaker inferred, more common sense might have been used in undertaking serious operations. His strictures were kindly but pertinent, and made by one who knew whereof he spoke. Sir James Berry in the early part of his career was surgical registrar for more than five years to one of the largest London hospitals, and while in that capacity, performed all the surgical postmortem examinations, about one thousand in number. Needless to say, the experience gained was invaluable, especially in the complicated field of abdominal surgery.

In the period since 1923, surgery has gone forward and on the whole, perhaps, the trend has been towards more conservative surgery.

Infant Death Rates in Countries at War

The United States has the seventh lowest infant death rate in the world, according to a report of the Census Bureau in Washington, and has a higher survival rate than that of the Axis countries despite their efforts to increase population.

Our infant death rate, deaths under one year of age, was forty-seven in 1940 for each one thousand live births, the lowest rate ever achieved here. This compares with a rate of sixty-five for Germany, one hundred and four for Italy, and one hundred and twelve for Japan. Germany succeeded in increasing its birth rate from 14.7 per one thousand population in 1933 to 20.4 in 1940, as against an increase in the United States from the low point of 16.6 to 18.9 in 1941. But the United States birth rate is still increasing and the infant death rate is more than twenty-seven percent lower than that of Germany.

The census report states that the comparatively high death rate existing among the Axis nations has important implications from the viewpoint of the population program for the Axis nations. The effectiveness of the official policies adopted by Germany, Japan and Italy for increasing the population requires the reduction of mortality among infants, or at least the maintenance of a constant rate concurrent with an increase in the birth rate.

The countries which have lower infant death rates than the United States are Norway, Sweden, the Netherlands, Australia, New Zealand and Switzerland. The rates for the first five are between thirty-seven and thirty-nine, which is approximately the same as the infant death rate among female white babies in the United States. The rate in Switzerland is forty-six. Infant death rates are lowest in cities of one hundred thousand and over, 39.3. In cities between ten thousand and one hundred thousand the rate is 46.5; in towns from two thousand five hundred to ten thousand 53.4, and in rural areas 50.1. January has the highest infant death rate, 53.9, and August the lowest, 43.2.

A rising birth rate, such as experienced during the last years, is accompanied by a proportionate increase in the number of accidental deaths in earliest childhood. The Metropolitan Life Insurance Company expects an increase of fatal accidents to infants in wartime. One item of importance is that in many homes, owing to the special conditions of family life arising out of wartime economy, it will be more difficult than

ever to safeguard children properly. The War Manpower Commission has declared: "The first responsibility of women with young children, in war as in peace, is to give suitable care in their own homes to their children." But many mothers, either through necessity or through desire to aid the war effort, will enter industry as soon as possible after the baby is born, thus taking away its natural protector and leaving it to the care of persons less experienced, and less concerned about the baby's welfare.

News Items

Personal.—Dr. Carl Alfred Moyer, assistant professor of surgery, School of Medicine of the University of Michigan, has been presented with the annual Henry Russel Award in recognition of his research work on the physiology of breathing and the effect of various drugs on the respiratory processes.

Dr. Raymond A. Vonderlehr, who recently completed eight years' duty as assistant surgeon general of the United States Public Health Service in charge of the division of venereal diseases, has been appointed director of district No. 6 of the Public Health Service, covering Puerto Rico and the Virgin Islands.

Dr. Walter B. Lancaster, Boston, has been awarded the Leslie Dana gold medal for 1943. This medal is awarded annually by the National Society for the Prevention of Blindness for outstanding achievements in the prevention of blindness and the conservation of vision. Dr. Lancaster, who is eighty years old, was selected for "long and meritorious service" in the society's cause.

Dr. Ernest Carroll Faust, professor of medical parasitology, Tulane University, New Orleans, La., has been awarded the Alvarenga Prize for 1943 by the College of Physicians of Philadelphia, for his "outstanding contributions to our knowledge of parasitology and tropical medicine".

The William Osler Medal of the American Association of the History of Medicine has been awarded to George Edward Murphy, of the University of Pennsylvania School of Medicine, according to *Science*, for his essay entitled "Evolution of Our Knowledge of Rheumatic Fever".

Dr. Raymond W. Waggoner, professor of psychiatry and director of the Neuropsychiatric Institute at the University of Michigan, has been appointed consultant and adviser to the director of Selective Service, War Man Power Commission.

Dr. Leverett D. Bristol, of Montclair, N. J., has been offered the position of state health director of New Jersey, to succeed Dr. J. Lynn Mahaffey, of Haddonfield, who has resigned. Dr. Bristol is health director of the American Telegraph and Telephone Company, with offices in New York.

Marion S. Fay, Ph. D., professor of physiological chemistry at the Woman's Medical College of Pennsylvania, has been appointed acting dean for the duration of the war. Dr. Margaret D. Craighill, dean of the College, has been commissioned a major in the Medical Corps of the Army.

Dr. T. Grier Miller, clinical professor of medicine at the Medical School of the University of Pennsylvania, was awarded the degree of doctor of laws at the recent commencement of the University of North Carolina. Dr. Miller is in charge of the gastrointestinal division of the University Hospital.

Dr. Gertrude Rand, research associate in ophthalmology of the Knapp Foundation of the College of Physicians and Surgeons, Columbia University, received the degree of doctor of science at the seventy-third commencement exercises of Wilson College.

Dr. Raymond B. Allen has been appointed dean of the Medical School of the University of Illinois, to succeed Dr. David J. Davis who is retiring. He will assume his new duties on September 1st.

Dr. Granville A. Bennett, associate professor of pathology at Harvard Medical School, has been appointed professor of pathology and bacteriology at the School of Medicine of Tulane University of Louisiana, New Orleans.

Dr. James H. Elder has been granted leave of absence from the department of psychology of the Louisiana State University, New Orleans, to serve as psychologist in the War Department, Washington, D.C.

Dr. Saul M. Small, of the Payne Whitney Psychiatric Clinic, has been appointed psychiatrist and assistant to the medical director of the National Hospital for Speech Disorders.

Dr. J. Morrissett Smith has been appointed professor of clinical otolaryngology at the College of Physicians and Surgeons, Columbia University, and executive officer of the department of otolaryngology at the Infirmary.

Dr. Margaret Janeway, New York, was sworn in the Army Medical Corps on July 1st, with the rank of major. She is the first woman doctor in the United States Army in the North African theatre of war, and the second in the entire army.

Dr. Floyd S. Markham, associate professor of bacteriology, Ohio State University, will take charge of the laboratories in North Africa for the Typhus Commission of the Rockefeller Foundation.

Dr. Valentine H. Fuchs, of New Orleans, was named president-elect, and Dr. Charles C. De Gravelles, of New Iberia, was installed as president of the Louisiana State Medical Society at the recent annual meeting.

Dr. Herman E. Diskin, of Detroit, Captain in the Army Medical Department, has been awarded the Legion of Merit for exceptional service in combat on Guadalcanal.

Dr. Conrad Berens, of New York, has been named civilian consultant in ophthalmology in the Office of the Air Surgeon, U. S. Army.

Dr. J. Paul Quigley has been appointed professor of gastrointestinal physiology at Western Reserve University, Cleveland.

Dr. E. Arthur Whitney, of Elwyn, Pa., was chosen president-elect of the American Association on Mental Deficiency at the annual meeting held on May 16th.

On July 2d, the eightieth birthday of Dr. Ludwig Hektoen, the Hektoen Institute for Medical Research, Chicago, was dedicated with suitable ceremonies.

Dr. Worth Hale, since 1918 associate professor of pharmacology and assistant dean of the faculty of medicine at Harvard University, will retire from active service on August 31st.

Occupational Therapy Exhibit.—An exhibition of occupational therapy was opened on June 1st at the Museum of Modern Art, New York, and will continue throughout the summer. This exhibit, which is sponsored by the American Occupational Therapy Association, demonstrates the function and purpose of occupational therapy.

Surgical Mission to Russia.—Colonel Elliott C. Cutler, Moseley professor of surgery at Harvard University and chief surgical consultant to the United States Army; Dr. W. G. Penfield, professor of neurology and neurosurgery at McGill University, Montreal, and Colonel Loyal Davis, U. S. Army, will take part in the Anglo-American Surgical Mission to Russia, according to *J.A.M.A.* The aims of the mission are to study the results of war surgery in Russia and to explore the possibility of extending medical relationships between these two countries.

Promotions on the Staff of the Rockefeller Institute.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announced the following promotions on the scientific staff, effective on July 1st: Assistant to associate, Dr. Merrill W. Chase, Dr. Stanford Moore, Dr. Isabel M. Morgan, Dr. Howard A. Schneider and Dr. William H. Stein; fellowship to associate, Dr. D. Wayne Woolley; fellow to assistant, Dr. Sidney Rothbard. The board also announced that Dr. Oswald T. Avery, who has reached the age of retirement, has been made member emeritus.

American Chemical Society.—The one hundred and sixth meeting of the American Chemical Society will be held in Pittsburgh, September 6th to 10th, with headquarters at the Hotel William Penn. Professor J. C. Warner, of the department of chemistry, Carnegie Institute of Technology, is general chairman and William P. Yant is general vice-chairman. An interesting feature of the program will be a symposium on antisyphilitic agents which will last for two days and which will be sponsored by the division of medicinal chemistry, of which John H. Speer of Chicago is chairman. Other symposia will be devoted to catalysis of war chemistry; industrial hygiene, and research management in small laboratories. The divisions of biological chemistry and agricultural and food chemistry will hold joint sessions on vitamins.

Staff Changes in the University of Minnesota.—Dr. J. C. McKinley, head of the department of medicine and director of the department of nervous and mental diseases, has been named head of a newly established department of neuropsychiatry, which includes both adult and child psychology, according to *Science*. Dr. Cecil J. Watson becomes head of the department of medicine and director of the division of internal medicine, and Dr. Raymond N. Bieter has been appointed head of the department of pharmacology, to succeed the late Dr. Arthur D. Hirschfelder.

Refresher Course in Diagnosis and Treatment of Venereal Disease.—The clinical refresher course in modern methods of diagnosis and treatment of venereal disease will continue during the summer at the New York City Health Department, under the auspices of the Bureau of Social Hygiene. The course is open to all New York physicians. Meetings are held every Wednesday morning at 9:00 a.m. in the Health Department building, 125 Worth Street, under the direction of Dr. Louis Chargin, consultant.

Redistribution of Civilian Physicians Recommended.—The Committee of Physicians for the Improvement of Medical Care, Inc., recommends a redistribution of the nation's civilian physicians from states where there are many physicians to war boom areas and rural districts where there is an acute shortage. This recommendation was included in the annual report of the Committee, submitted by the secretary, Dr. John P. Peters, professor of internal medicine at Yale University School of Medicine. The United States Public Health Service was urged to take this step to safeguard civilian health for the duration of the war. It was pointed out that the condition had become critical, that the health of many communities was seriously threatened.

International Spanish Speaking Association of Physicians.—At a meeting of this association, held recently in New York, a symposium on "The Crime Dilemma in Wartime" was presented. The speakers were Dr. W. G. Henry, of Cornell University Medical College, Dr. Joseph Wilder, of the University of Vienna, and the Hon. Judge Pankin, of the New York Court. The Consul General of Panama was the guest of honor and he brought to Dr. J. M. Gershberg, president of the association, a personal letter from his brother, the president of Panama, His Excellency Sr. de La Guardia, accepting the honorary presidency of the International Spanish Speaking Association of Physicians. The eighteenth season of the society's scientific session will be inaugurated on October 19th.

Darkfield Facilities Available at Health Department Centers.—Facilities for darkfield examinations for syphilis are available to physicians at seventeen social hygiene diagnostic centers operated by the Bureau of Social Hygiene of the New York City Department of Health.

This service is offered without charge to all physicians to aid them in the diagnosis of early syphilis. To obtain this and other services, patients must be taken to the most convenient social hygiene center, or sent with a written request. After the examination the patient will be instructed to return to the referring physician. Reports are made directly to the physician by telephone and confirmatory letter. Further details regarding the service may be obtained by writing to the Bureau, 125 Worth Street, New York 13, N.Y.

Grants for Quinine Research.—Special grants to three American universities and a research institute have been made by the Cinchona Products Institute of New York for the purpose of undertaking special investigation of quinine and other alkaloids of cinchona. These four institutions are Cornell University Medical College, New York University, Johns Hopkins University and the Battelle Memorial Institute, Columbus, Ohio. Two research fellowships for accredited workers in cinchona alkaloids also have been announced by the Institute.

Examination for Medical Guard-Attendants and Technical Assistants.—The Civil Service Commission announces an examination to secure medical guard-attendants and medical technical assistants for the U. S. Public Health Service. Full information regarding the qualifications required for these positions and proper application forms may be obtained at first or second class post offices, Civil Service Regional Offices, and the Civil Service Commission, Washington.

Psychological Factors in Nutritional Program

(*Continued from page 472*)

Psychodietetic Planning

From a psychological viewpoint, a nutritional plan must take into account the following features: first, the balance of the diet; second, quantity; third, palatability; fourth, budgetary limitations; fifth, variability; sixth, adjustment to individual tastes; seventh, economy of time and effort.

I shall take up briefly each of these points.

Balance of the diet to me is only of great importance in dealing with malnourished individuals who present psychological symptoms. However, the housewife should know what constitutes a balanced diet, and in the back of her mind should be the idea of purchasing food which would keep the diet in balance. Certainly she should see that every nutrient element necessary for health is included in her meals within a reasonable period of time even though there are likes and dislikes in her family which preclude some article of diet being used frequently. I know one family where the husband dislikes oysters. Since oysters are useful sources of iodine, it was necessary to find substitutes for the iodine in oysters or to serve them when need arose in a disguised fashion.

When rationing limits the amount of food in the variety or quantity it is necessary that even greater ingenuity be used. Many wholesome cuts of meat which would be unpalatable under ordinary conditions can be made palatable by the use of spices, sauces, seasoning and ingenuity, but unfortunately some of these are also limited. Nevertheless, it should be possible even during times of limited food, unless the limits become too tight, for a well adjusted housewife to satisfy both the psychological and the nutritional needs of her family.

Probably a food is important not only to satisfy nutritional needs but also to give a feeling of satiation which is significant in its contribution to a feeling of well-being. In this respect the socalled fillers or stretchers which make a desirable food go farther are useful. Morale both in the home and through the nation is likely to show a definite falling off when belts have to be tightened. It is said that in Germany even sawdust has been used in order to give bulk to the diet. Let us hope that such means of dietary supplementation will not be necessary during our own period of food limitation.

A study of individual differences reveals that some people eat more than they need from a nutritional viewpoint alone. Is it not, perhaps, psychologically important, that he should *feel* satisfied? On the other hand, he should not eat so much that he will be sleepy or he may not be able to do his daily work and to enjoy life. It is difficult to define a psychological balance which weighs feelings of pleasure of eating against being fed only the amount of food which constitutes a balanced diet. It is my own personal belief that every effort should be made on the part of a housewife, on the part of the institutional nutritionist, to see that the people whom she feeds actually feel well-fed but not stuffed.

In that regard, I call to mind several persons whom we saw, who, due to the extra good preparation of food in their own home, were drowsy after lunch and after supper. One man was not reelected to a county judgeship because he would fall asleep on the bench. We corrected this situation by advising him to have his large meal in the evening and to try to restrict his diet to almost nothing at noon. This he did, and when the next election rolled around he managed to get back on the bench, and he stayed there because he was able to stay awake.

This case is an illustration of how the psychiatrist can work well with a nutritionist. However, it is unfortunate that too many physicians do not think of the "pleasure" side of the preparation of the food but only of quantitative diets in terms of reducing or building the body rather than treating the concomitant mind.

Another consideration must be given to the balance between satiation and nutrition. Some people cannot eat from a plate which is too full. Others feel they are being cheated in a restaurant if they do not have a crowded plate. Constant complaints come from men about what they call "tea-room portions". In other words, the portions intended primarily for women are a great deal smaller than they need to be for men, for, as is well known, women need and therefore eat less than men. In hospitals and institutions which cater to women it would be well, I believe, if the portions were smaller to begin with, allowing for additional servings to those patients who want and need more.

Another point which interests me about the size of portions is in fitting certain sized portions into the budget. If we could use the dietary scales more, or have similar devices in institutions where measured portions can be dealt out, one could do a great deal more with his budget. Individual tastes, such as those I have outlined above, those which were obtained in early childhood, or are due to racial or national differences, of course, need to have even institutional diets adjusted so far as possible for them. In a large institution it is, I know, impossible to give the one or two Italians out of five thousand inmates spaghetti for each meal. Yet, because spaghetti is a good staple article of diet, it can be used several extra days from the small amount which is left over from the whole institution to be warmed up for the use of those few forlorn patients.

The tasty preparation of food is very important in the home, particularly among those who have an adequate income. It is amazing how infrequently wives and housekeepers who direct the activities of cooks forget such little thoughtful touches as a leaf of lettuce under slices of tomatoes that produces a combination of rather effective color. All of these things must be carefully observed from a psychological viewpoint. I must admit, however, that the research that needs to be done in this field still remains to be carried out.

It might interest those whose major approach lies in the providing of balanced diets, to realize that special diets are neglected along the lines of psychological science. Only too often a physician laying out a reducing diet prescribes insufficient bulk which leaves the patient not only undernourished but also discontented and hungry. It is my opinion that if nutritionists and physicians who deal with nutrition would bear in mind the psychological approach, reducing diets would not be the problem that they are today. Much more food

could be given so that a dieter could go through life in a more adequate fashion, and as reduction becomes more apparent, feelings of pleasure and the desire to carry out the diet further would supplement the original psychological approaches. No matter how strict the diet of a patient, the diabetics have learned the use of substitutes to freshen and improve the appearance of the diet, and further ingeniousness along those lines is indicated. It requires worse threats to try to keep the diabetic eating monotonous food than merely to stay on his diet. The monotony and routine of such diets can be easily overcome by the use of rather colorful foods of low food value and high diversification in the allowed food quantities through the use of bulky and flavorful articles of diet. Even in big institutions, however, too little attention is given to making the restricted diet an interesting and pleasing one. Stress is only laid upon the physiological side of it.

Correction of Psychological Nutritional Problems

What are the possibilities of solving these problems? I can only touch upon them and some of my solutions are hypothetical. Much more research needs to be done. I will say that we must be sure not to have the feebleminded, the maladjusted and untrained persons in our kitchens. However, if they are not too maladjusted there should be available special simple menus and recipes which they can use. We have recently had in our home a woman whose native mental endowment was about that of a seven or eight year old child. We carefully watched her behavior in the kitchen and we found that she was a careful cook, she did not get into trouble, but she followed directions slowly and prepared food which was palatable if she was given specific careful instructions. In one of our Detroit papers appeared a daily menu, in which is included a simple recipe for each article of diet. There is considerable variation but the recipes are economical and designed to require a minimum of effort, for when a big dish of meat is being prepared in the oven, baked potatoes and other oven-made dishes are utilized, so that a person does not have too much diversified activity in the preparation of a meal.

The woman was able to carry out these menus slowly but accurately and we had excellent meals in our house. I feel that more newspapers should carry out this procedure. So far as I know the Detroit paper is the only paper at the present time that gives both the menus and the complete recipes for each day. Another thing this paper did which was of great importance was to publish on Fridays the menus for the whole of the week ahead so that large quantity purchases could be carried out. These menus are also adjusted with a mind to their cost, and to some extent to nutritional balance. During wartime such menus, in view of rationing and other limitations, are especially valuable.

I have also been making a study of the recipes which come from commercial sources. Some of them are disappointing, many are repetitious, and many do not give any indication as to the food or vitamin values. Most of them cannot be filed in any simple way because they are printed on different size leaflets. Some cannot be punched to put them in a loose-leaf book, and when they are to be cut out and pasted on cards, the reverse side is also covered with printing, causing a loss of half of the information given. Some of these recipes are even difficult to obtain; some commercial sources put out a list of recipes once a month, and it is necessary to send a label for them each time. Flour recipes are found only in the flour sack, but if the housekeeper does not use a whole sack of flour a month, the recipes may not be received.

It is difficult during times of rapid changes in food supplies to provide recipes which are both timely and comply with the demands made by food shortages. These, of course, can occur suddenly and unexpectedly, make government action necessary, and such action can ruin a whole booklet of recipes. For instance, many housewives were encouraged to buy dried beans and peas as a meat substitute when the meat shortage first appeared. There was no way that those who wrote the recipes for the use of these vegetables could know that they would be included in the vegetable products controlled in the second ration book and that they then could not be freely used as a meat substitute. When sugar rationing was introduced authors of cook booklets failed to realize that, except for a few homes where there is a great deal of home baking, particularly in rural neighborhoods, the amount of sugar allowed per person would prove to be perfectly adequate for reasonable daily needs, so that no great sugar saving would be required for the average housewife. These booklets provided recipes using honey and maple syrup, of which the supply was extremely limited and which, especially the latter, advanced rapidly in price until it appeared much more impracticable to use these substitutes than sugar. The very practical idea of cutting out sugar and changing the tastes of the excessive user did not seem to occur to anyone.

From the viewpoint of educational psychology I have made a cursory analysis of cookbooks and find that they also offer some problems. The ideal cookbook, to my way of thinking, has not yet appeared. It should be set up in such a way that the pages could be taken out and clipped onto a clipboard, and yet the pages should be relatively indestructible as should be the binding. The volume ought to be relatively complete and should, as does America's Cookbook, have variations from basic recipes. But many of the older cookbooks do not have this, and some of the more popular cookbooks, such as the Settlement Cookbook, do not have accurate quantities or directions in the recipes. Perhaps someday a group of psychologists, medical men, and nutritionists will get together and produce the cookbook which will be simple, useful, and enable the housewife to supply a pleasant, nourishing, balanced and economical menu, day in and day out.

I feel, too, that there should be better courses for brides especially in wartime. Girls are apt to marry younger, have a greater need for advice because their husbands are frequently away and they have the additional problems of rationing, food limitation, and inflation costs when they begin their cooking careers. Many of the wealthier girls get into a course in housekeeping in special schools which are supposed to train them in cooking. However, they are plunged into the problem and allowed to work for a few weeks on simple recipes, and if they stay with the course—many don't—finally, after a long period of time, get into the more intricate affairs. They are supposed to get enough background in the short period of time so they can do adequate cooking. I do not believe this is possible, but urge

greater training in nutrition and food preparation for diet for our young women.

And, too, there should be a greater number of meetings of housewives to take up nutrition and to cover the psychological principles of nutrition. I know of almost no meetings where those interested in foods are brought together the same way that those interested in reading, art, or music are. Of course, it is true that the dietitians have their meetings, but most housewives are not dietitians and are not interested in the technical part. The Red Cross courses in nutrition are proving helpful. Such meetings should have entertainment, should have other enticing features about them besides the mere preparation of food. Here in Detroit, and I presume in other cities, a local newspaper brings a very colorful woman to town once a year, and she provides for those women who are able to come to her gatherings, not only an entertaining but a definitely useful way of learning to improve their cooking. The entertainment is highly satisfactory; however, the cooking instruction depends on the background of the person watching her deft manipulation of kitchen utensils. I think that the time will have to come when dietitians will be trained in the psychology of foods as well as in their preparation and their physiology.

There are a number of other features which deserve attention in the psychology of diet and nutrition. The field is as intricate and as vast and interesting as any group of problems that can be found in medicine and psychology. I only hope that this presentation can serve as a rallying point for the two groups of specialists: the psychologists and the nutritionists.

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Book Reviews

War Manual on Surgery

Neurosurgery and Thoracic Surgery. Prepared and edited by the Subcommittees on Neurosurgery and Thoracic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Illustrated. Philadelphia and London: W. B. Saunders Company, 1943. Pp. 310. Price $2.50.

This is the sixth in the War Manuals Series; whether others are yet to come is not stated. Here we have two different subjects, with little in common, bound under one cover. The larger section, 218 pages, deals with gunshot and other wounds of the scalp, skull, brain, spinal cord, intervertebral discs, peripheral nerves, and infections of the central nervous system and its coverings. The surgeon at the front must choose his operative cases with an eye to the greatest good to the greatest number, so that the largest percentage of convalescents can be returned to the battle line. It is better to do a few complete, successful operations than a large number of incomplete and, therefore, unsuccessful operations. Severe injuries to nerves are always followed by wide degeneration in the proximal segment, the distal segment, and the area supplied by the nerves in question. This begins about the third day and continues until fibrous tissue replaces nerve tissue, after which, grafting cannot be expected to succeed. The method of diagnosing "live nerve tissue" is described and also the technique of suture and aftercare. The section dealing with thoracic surgery stresses the fact that thirty-three percent of all dead on a battlefield died of injuries to the chest. Mortality during transportation and in the first aid station is from twenty percent to thirty percent. It is often a matter of speedy evacuation and rough handling of the wounded necessitated thereby. The difficulties are due to blood beneath the pericardium, in the pleural sac, and the subfascial spaces of the thoracic wall. Air in the cavities and tissues is of major importance also. Operative surgery of the thorax calls for a high degree of surgical skill, in which immediate diagnosis and speed are in first place. Dangers due to infection have been greatly reduced by the sulfa drugs. Patients who survive the first few hours or days are likely to pull through, if they can be safely transferred to base.

Roentgen Diagnosis

Outline of Roentgen Diagnosis. An Orientation in the Basic Principles of Diagnosis by the Roentgen Method. By Leo G. Rigler, B.S., M.B., M.D., professor of radiology, University of Minnesota. With 254 illustrations shown in 227 figures, presented in drawings and reproductions of roentgenograms. Second edition. Philadelphia, London, Montreal: J. B. Lippincott Company, 1943. Pp. 322. Price $6.50.

Roentgenography is a unique specialty in that it cuts squarely across all fields of medicine. The author, therefore, presents principles and procedures of roentgen diagnosis from the viewpoint of pathology, physiology and clinical medicine on the one hand, and biophysics and roentgeographic technique on the other. But roentgen diagnosis is still in such a dynamic and fluid state that no book in the field can be kept up to date without frequent and thorough revision.

Since the publication of the first edition of this book there have been marked advances in the methods and applications of roentgen examination. Newer procedures, such as roentgenokymography, body section roentgenography, myelography for herniation of the intervertebral disc, and many others, now have been included in the text. Additions to our knowledge have helped greatly in the recognition of certain syndromes such as sarcoidosis, brucellosis, and erythroblastic anemia. Discussions of the technic and value of fluoroscopy and of the dangers incident to roentgen examination have been added.

Cardiology

A Short History of Cardiology. By James B. Herrick, emeritus professor of medicine, Rush Medical College; consulting physician to Presbyterian Hospital, Chicago. Springfield, Ill., and Baltimore, Md.: Charles C. Thomas, 1942. Pp. 258. Price $3.50.

The period covered in this short history is that of the seventeenth, eighteenth and nineteenth centuries, from Harvey in 1628 to Roentgen in 1896. Each period is discussed in terms of the individual who dominated the era conforming to Emerson's concept that there is no history but only biography, and that is precisely what makes the book so fascinating.

The early writings on the heart were based upon folly, superstition and charlatanry in that little space given to prehistoric times.

The author presents the following subdivisions: 1. From earliest times to 1628 (Hippocrates to Harvey): (a) Hippocrates to Galen 460 B.C. to 130 A.D., (b) Galen to Vesalius 130 A.D. to 1543 (*De Fabrica*), and (c) Vesalius to Harvey 1543 to 1628 (*De Motu Cordis* with which scientific medicine may be said to begin). 2. From 1628 to 1819: Harvey to Laennec period of clinical and necropsy observation. 3. From 1819 to 1845: Laennec to Virchow; period of physical diagnosis. 4. From 1845 to about 1880: Virchow to Pasteur and Koch; period of the microscope and experiment and their clinical application; rise of German influence. 5. From 1880 to 1895: Pasteur to Roentgen; period of bacteriology to x ray. 6. From 1895 to the present: period of instruments of precision and of the laboratory; revision of anatomy and physiology of the heart, with resulting changed conceptions of its disease.

Heart disease is the story of a bad disease, not very bad but a pretty bad disease and cannot be properly evaluated without the background which has enabled its functional mechanism to be put to the fore at every age and every stage of life.

Educational Psychology

Educational Psychology. By WENDELL W. CRUZE, Ph.D., assistant professor of psychology, Wilson Teachers College, and adjunct instructor in educational psychology, The Johns Hopkins University. New York: The Ronald Press Company, 1942. Pp. 572. Price $3.25.

This volume is designed to meet the needs of those interested in teaching children or who are actually preparing to teach; topics which do not contribute to this objective have been given little attention. On the other hand, since the literature of pertinent research is so vast that only a part of its potential contributions could be included, special studies and investigations were selected for presentation on the basis of their values in clarifying problems under discussion and in providing a background of facts and principles of value in the organization and direction of learning programs. Current concepts of learning are especially helpful in orienting physicians on problems in child psychology involving the mentally slow child.

Psychosomatic Medicine

Psychosomatic Medicine. The Clinical Application of Psychopathology to General Medical Problems. By EDWARD WEISS, M.D., professor of clinical medicine, and O. SPURGEON ENGLISH, M.D., professor of psychiatry, Temple University Medical School. Philadelphia and London: W B. Saunders Company, 1943. Pp. 687. Price $8.00.

A new title for an old procedure brings a subject to the fore. Psychosomatic medicine is concerned with both mental and physical aspects of the disease process with emphasis on the influences that these two exert on each other and the individual as a whole. It expresses the rôle of the family physician for centuries when diagnosis and treatment depended on bedside methods of examining a patient. In modern medicine, with the adaptation of recent techniques, the understanding of illness and the treating of the sick involve more than knowledge of disease. So much more important is it to view the functional ramifications of disease in terms of the patient and his problems than in terms of disease entities and their variations, that this aspect of medicine is a welcome relief from the current emphasis on laboratory medicine. Success in everyday practice depends on treatment of the patient as a whole rather than his disease; hence the urgency of thorough familiarization with the emotional forces operating behind disease doors. The dynamic psychology of Freud laid the foundation for psychosomatic medicine, and the work of Ferenczi, Abraham, Jones, Jelliffe, Deutsch, Witthower, Alexander, Menninger and Dunbar have laid the foundation for this clinical treatise. The book presents psychosomatic problems in everyday practice in terms of the emotional life of the patient. It is not content with evaluation of the organism as a whole but lays stress on mental factors producing illness. After a preliminary survey of the nature of psychosomatic medicine, each system is discussed in terms of its functional deviations and standard therapeutic procedures are correlated with each disease entity.

Nutritional Deficiencies

The National Malnutrition. By DANIEL T. QUIGLEY, M.D., F.A.C.S. Milwaukee: The Lee Foundation for Nutritional Research, 1943. Pp. 113. Price, $1.50.

Dr. Quigley has presented in this book the results of forty years of medical practice devoted in great measure to the prevention and treatment of deficiency diseases. His wide experience in this field of medicine enables him to speak with authority on the subject of nutritional deficiencies.

The book contains the following chapter headings: Our Dietary Needs; Why We Must Have Vitamins; Why We Must Have Minerals; Our Dietary Intake (What Do We Get); What Are the Results of Our Dietary Errors; How Widespread are Deficiencies; Cancer—Its Treatment and Prevention; Nutritional Treatment of Anemia; What Must Be Done? In the chapter on cancer Dr. Quigley expounds his belief that cancer is the direct result of nutritional deficiencies. He says he has found that cancer never occurs in an area without a history of previous infection, and states further, that he has never been able to find any infectious condition that was not caused by inadequate nutrition. Dr. Quigley, who was formerly professor of surgery in the University of Nebraska, was one of the first American physicians to use radium in treating cancer.

This book, which deals with the practical aspects of deficiency diseases, should be of value to every practising physician.

Laboratory Diagnosis

Clinical Laboratory Diagnosis. By SAMUEL A. LEVINSON, M.S., M.D., professor of pathology and assistant professor of medicine, and ROBERT P. MAC FATE, Ch.E., M.S., Ph.D., assistant professor of pathology, University of Illinois College of Medicine. Second edition, thoroughly revised. Illustrated with 156 engravings and 15 plates. Philadelphia: Lea and Febiger, 1943. Pp. 980. Price $10.00.

The new edition is a great improvement on the previous work. Every phase of laboratory diagnosis is included. There are chapters devoted to laboratory methods in pediatric procedures, skin tests and special biological examinations, food analysis, histological technique, legal medicine and toxicology. Each chapter contains the fundamental principles as a basis for evaluation of abnormal findings. Chemical methods for the vitamins, sulfonamids, and enzymes have been added in simple terms to enable the student and practitioner to follow the procedures. The chapter on hematology contains bone marrow findings, Rh factor, prothrombin determinations, and other procedures used in hospital laboratories.

Critique

Infections We rarely remember that parasitic bacteria really have a hard time finding new hosts; if disease-producing, they also tend to cause counterattacks in the host organism. Infections can be caused by fine droplets hanging in the air, but only a coarse spray is really very effective, because all people have a certain immunity, and most of us can stand a few extra organisms without danger. There are many more carriers of all sorts of bacteria than ever become sick with them; long association with them can enable enough bacteria to get to a new host to batter down his immunity. Boys who sleep together transmit infections far better than if they are only together two or three hours playing. Even in the 1918 epidemic about half the people exposed did not acquire influenza. There is a minimal effective dose of each germ for each individual; resistance thus differs from person to person. Many develop a latent immunity, and diphtheria toxin has been found in the blood of individuals who have never had the disease. Exposure to minor, attenuated dosages of germs is important; from the herd viewpoint of preventive medicine it is also important that infections be abroad and produce latent immunities. A few get the infection badly, die or are ruined for life, but they are sacrificed to protect the many. There is some immunity after a cold or influenza, though it is often so brief few notice it. The amount of disease is a function of the bacterial density, and so is the extent of the immunity stimulated, but the latter cannot be encouraged without increasing the former. To strike the most advantageous relationship between the enmity and friendship of bacteria is a real problem. When environment changes, people often come in contact with greater quantities of disease than their systems can effect immunity for, and so become ill, though they remained immune at home when exposed to only small doses of infection. The complete prevention of pathological bacteria might be disastrous. (Cf. Sheldon F. Dudley in *Lancet,* October 27, 1928, p. 849.)

Is the Cell Theory Inadequate? In the *Journal of Morphology* (8, 639, 1893) C. O. Whitman analyzed the cell theory proposed by Schwann in 1838-39, which was still orthodox. It held that each cell was an independent individual and also part of the organism which subsisted by the reaction of its elementary parts. What about this double life? The vertebrate egg is hence a cell, and all life must arise from the division of preexistent cells. All higher organization springs from such developments. The cell is the core of the doctrine and all else revolves around it. "Intracellular" and "intercellular" connote absolute distinctions. The organism composed of many cells is therefore a complex of simple cells. No infusoria can have nerve, muscle, or mouth, as that would be forbidden by the cell doctrine. Yet botanists have to invoke the organism viewpoint. Preorganization of the egg gets its start before cell division begins, and cells having the same origin in cleavage, and the same position in the embryo, often develop into fundamentally different morphological structures. Microscopes are made to respect cell boundary lines. Yet intracellular and intercellular development often appear to be indistinguishable under it. All postulates that chromosome-like things govern heredity imply units that are smaller than cells but of the greatest importance. Yet development is the function of organization. How elementary is an egg cell? How is the passage made from the simple cell colony to a commonwealth of differentiated and mutually dependent cells? The idea invokes anthropomorphism. Whitman held instead that individual organization counted most, because it precedes and regulates cell formation. The multicellular Microstoma behaves quite like the unicelluar Stentor; it, too, duplicates, and fission follows. The artificial division of a Stentor and a Hydra is the same in method. Highly differentiated organs are often reproduced by single cells like Cyclas. Embryonic masses act as units and cells do not participate as such in original formative acts. Where cell formation occurs it is a developmental artefact, not directive. Regeneration and formative power is one thing throughout the organic world, but it works by different means. The caudal end of an embryo is established long before the part of the germ ring representing it is brought into place. The difference between an infusorium and a highly organized animal is not qualitative; the essential difference is not in the number of cells either. One must look back of cellular structure for basic organization. An insect egg reaches a relatively late state of development sans cell boundaries. Functional economy, social instinct, division of labor, and mutual dependence do not hold the cells together, but the plain constitutional bond of individualized organization.

Franklin John Bigelow says Franklin wrote: "Men I find to be a sort of beings very badly constructed, as they are generally more easily provoked than reconciled, more disposed to do mischief to each other than to make reparation, more easily deceived than undeceived, and having more pride and even pleasure in killing than in begetting one another; for without a blush they assemble in great armies at noonday to destroy, and when they have killed as many as they can, they exaggerate the number to augment the fancied glory; but they creep into corners and cover themselves with the darkness of night when they mean to beget, being ashamed of a virtuous action." Phillips Russell in his life of Franklin tells us: "So, at the age of twenty-four, Benjamin became the head of his own business, without having saved any money, without having worked unusually hard, without having omitted any of the pleasures beloved by imaginative youth, and without having lived up to any of the maxims for which he is later to become renowned."

Diet and Calculi In the *British Medical Journal* for November 10, 1928 (p. 832), Dixon and Hoyle reported that the administration of irradiated ergosterol in large doses to rats by mouth resulted in the formation of urinary calculi. They attributed this to probable increased absorption of calcium and phosphorus from the intestines and the kidney excretions, though they did not confirm the pathological changes found by German observers to accompany similar dosages. Much previous work had already shown the effect of diet on calculus formation.

THE CRITIC

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AUGUST 1943

Medicolegal Notes

Insufficient Evidence of Total Disability

Testimony of a medical friend of a claimant under a group certificate that the claimant was losing weight and becoming emaciated and the opinion of the witness that claimant was not able to work was held admissible by the Pennsylvania Superior Court in an action by the named beneficiary under the extended death benefit provision. Woolford vs. Equitable Life, 27 A. 2d 411.

There was a direct conflict in the medical experts' testimony as to whether the decedent suffered from acute pulmonary tuberculosis. Although a layman may give a description of perceptible changes that took place in an insured person, the apparent physical condition and obvious symptoms, his testimony must be confined to facts within his knowledge and may not be extended to matters involving the existence or nonexistence of a disease, which is only discoverable through the training and experience of a medical expert.

The trial court's definition, in its charge to the jury, of "total disability" as such as would prevent the insured from engaging in carrying on any gainful business or occupation and "himself performing an essential and substantial part of the work incident thereto", was held to be not incorrect as applied to the insured's work in a steel "mud" mill, where the atmosphere was "dusty practically all the time." The charge was held sufficient to advise the jury that the beneficiary could not recover if the insured was able to do a substantial part of the work that he ordinarily was capable of performing.

Proof of Treatment for "Serious Disease"

In an action on a life policy, voidable if the insured was a patient in an institution for the treatment of disease within two years before the date of the policy, unless his treatment was shown by a claimant under the policy not to have been for a serious disease, evidence of numerous treatments of the insured for osteomyelitis of the leg during the two-year period, proved by hospital records, was held to shift the burden on plaintiff to show that the treatments were not for a serious disease. Evidence offered by plaintiff that these treatments were for a bullet wound insured received about twenty years before, was held insufficient to carry this burden of proof so as to warrant the jury in finding a verdict for the plaintiff. More definite and specific evidence as to the nature of the disease for which the insured was treated was held to be imposed upon the plaintiff. Judgment for the plaintiff was therefore reversed and entered for plaintiff for the amount of premiums paid and tendered at the trial. Baum v. Metropolitan Life Ins. Co., Pennsylvania Superior Court, 19 A. 2d 486.

Use of Title "Dr." by Drugless Practitioner

In a mandamus proceeding to have petitioner's license as a drugless practitioner restored after its revocation by the Board of Medical Examiners for the State of California, the California District Court of Appeal held, Dare vs. Board, 127 P. 2d 977, that the holder of a license as a drugless practitioner who allegedly had in his window a sign which had "Dr." before his name, was guilty of violating the California statute requiring certain licensed persons who used the title "Doctor" or "Dr.", such as drugless practitioners, to indicate the type of certificate held. If, however, he had the degree of naturopathy, as claimed by him, the use of the letters "N.D." was not a violation of the Business and Professional Code providing that the use by the holder of any certificate of any letters, words or terms indicating that he is entitled to practice a system or mode of treating the sick or afflicted for which he is not licensed in the state, constitutes unprofessional conduct. Naturopathy, it was held, is a form of drugless practice within the definition thereof in section 2138 of California St. 1937, p. 1258.

Insufficient Evidence of Relation Between Trauma and Stiff Back

Where the evidence in a compensation proceeding merely showed that the claimant developed a stiff back and first consulted a physician three months later, was compelled to leave his work, for three days five months later, and the medical testimony was to the effect that claimant's condition could have been, or possibly was, the result of trauma, the evidence was held insufficient to justify an award. Pfister vs. Industrial Commission, Ohio Supreme Court, 40 N. E. 2d 671.

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*Swartz & Reilly: "Diagnosis and Treatment of Skin Diseases", p. 66

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How One Thing Leads to Another in Science

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(*Continued from page 317*)

Rusk said many of the departments publications "were essentially and unavoidably scientific and the careful record of scientific investigations by scientific men, the value of whose conclusions must necessarily bear the scrutiny of scientific investigators the world over." A Division of Records and Editing was then called into existence and George Wm. Hill, its new Chief, reported upon its first year of work in 1890.

It is curious that, while this obligation was realized acutely over forty years ago, today, in a much richer country, there is a tendency to forget the enormous value of scientific work and to protest against its widespread publication. Yet out of Dr. Harvey W. Wiley's series of comprehensive monographs on *Food and Food Adulterants,* which the Bureau of Chemistry began to publish in 1887 as *Bulletin* 13, the series being completed in 1902, came the Food and Drug Act. The investigation was fundamental, its publication was valuable, and the ultimate results, in part unpremeditated, were stupendous.

Again, in the old days when I was in college, the official methods of analysis of foods published as Bureau of Chemistry *Bulletin* 65, later revised as *Bulletin No.* 107, was in every college and university laboratory in the country. Such publications were widely used in those days and they gave government scientists and their work enormous prestige. It seems ridiculous that a lack of funds should have caused their discontinuance.

There again were the early publications of W. O. Atwater in what was then called the Office of Experiment Stations, on the subject of nutrition. They are classics. Dr. Atwater's work gave to the science of nutrition its basic methods. Not only did he compile authoritative lists of the chemical composition of various foods, but he first used the respiration calorimeter to make accurate measurements of the income and outgo of matter and energy in the human body. This fundamental method has subsequently been utilized by dietitic workers all over the world and world-wide indebtedness to Dr. Atwater's work is shown by repeated references thereto found in all standard works on human nutrition.

The methods were also applicable to animal nutrition and have been used much in that field. The earlier work appeared between 1896 and 1899 when Dr. Atwater was the country's leading authority on the subject. The unearned increment here is one of scientific methodology. Without such increments research can make no effective progress. It was also Atwater who, in Rusk's time, insisted that *Farmers' Bulletins* be issued by the Department of Agriculture. The first of them appeared in 1889.

An example of an unearned increment of another sort attaches to the work of Dr. L. A. Rogers on butter. When Rogers began to work on butter in the Department of Agriculture the theory was held that ripened cream should be used as a raw material because its high acidity promoted the keeping quality of the butter. In spite of this wisdom on the part of private industry the butter of the day acquired objectionable flavors in storage to the extent of seventy-five percent. This reduced the selling price of seventy-five pounds of every one hundred several cents per pound. It was claimed that these fishy flavors were caused by bacterial activity in storage. Then Dr. Rogers went to work. In 1909 he reported.

He proved that the objectionable flavors in stored butter were caused by a process of oxidation accelerated by the high acidity of the cream from which the butter was made. He could control the development of the flavors perfectly by reducing the acidity of the cream used. He found that butter made from pasteurized, nonacid cream had exceptional keeping qualities. This was revolution and Rogers at once found out what it was to be a dangerous radical. He was widely caricatured and ridiculed. Editorials appeared saying "Not so fast, Mr. Rogers," and he learned that government scientists were academic meddlers full of fly-blown ideas.

But he was permitted to demonstrate by making very large quantities of butter for the Navy. His method proved eminently successful. Its general adoption followed, first in this country, then throughout the world, for scientific revolutions are inevitably international in character. An unearned increment of the work is the valuable information it produced about the oxidative deterioration of fats which has been most useful in the food industry generally. It is also conservatively estimated that the improved method of making butter has profited the American industry to the tune of five million dollars annually for the past twenty years. Dr. Rogers also became one of the most distinguished bacteriologists in America.

Meanwhile dairy research continued. It has shown how to reduce waste skim milk to powder, making about nine pounds of the latter from each one hundred of the former and getting eight or nine cents a pound for it. It has shown how to use the dried milk in baking. Dr. George Holm and others of its scientists have shown still more recently how whole milk can be dried and shipped readily without its fat going rancid. It has shown newer and vastly better ways of making casein used in the manufacture of coated paper. It has shown how to widen the market for lactose or milk sugar, how to make it not only more cheaply, but in a sweeter and more soluble form than ordinary. Dr. Rogers has had a hand in that work too.

Not only did this government scientist completely revolutionize the technic of butter-making the world over, but he discovered basic scientific facts about the manner in which fats deteriorate by oxidation. That was about 1909. Nearly twenty-five years later two scientists in the same Department observed that light had a great deal to do with the rapidity of such deterioration, and that rice polish and bran, for instance, became rancid in a very few hours if exposed to the ultra violet rays of a mercury vapor lamp. If, however, they were exposed only to direct sunlight they did not become rancid for several days.

This was because sunlight contained less ultraviolet rays than the lamp light. An effort was made to screen out the rays producing rancidity by wrapping fatty food products in cellophane of different colors. It was

(*Continued on page 502*)

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finally found that if the cellophane were colored a shade of green approximating that of living leaves containing chlorophyl, rancidity could be postponed indefinitely. So butter, lard, cottonseed oil, potato chips and such things should soon begin to reach the market packaged in green containers to prevent them growing rancid.

These things happen constantly in government scientific work. Did you ever hear either of Wm. Mansfield Clark or hydrogen ions? You are probably unfamiliar with both yet they touch your life constantly. Clark was employed in the bacteriological laboratory of what is now the Bureau of Dairy Industry. Certain scientific problems resisted solution because insufficient was known about acids and alkalies and their accurate measurement to solve them. We could measure in gross how acid a solution was but there was a quality of acidity that eluded chemists and bacteriologists.

When an acid is in solution it "dissociates;" that is, certain ions of hydrogen float about freely. In the case of an alkali the free ions are the hydroxyl or OH ions. Now when a strong acid like muriatic (or hydrochloric) is dissolved in water about seventy times as many hydrogen ions dissociate as in the case with acetic acid. Science needed, then, a method of measuring the number of free ions in acid and alkali solutions and Clark provided that. He made a complete and systematic science out of this hydrogen ion business and published his results in a very highly technical book which has worldwide recognition.

But what does this mean to you and to me? It means that certain disease germs can now be differentiated because culture media can be assayed more accurately for their acidity or alkalinity. It means that medical research and bacteriology and chemistry have a new tool. The practical applications of this work extend to laundries where the reaction of washing solutions is carefully measured, to factories making drugs and other products, to dairies and city health departments and to a thousand and one activities and institutions that make life better for us. This we owe to a Department of Agriculture scientist practically unknown to laymen.

Lastly let us consider photoperiodism . . . whatever that may be, you say. Well, in ordinary language it is the discovery that the length of day and the intensity of illumination influence plant growth. W. W. Garner and H. A. Allard published their first paper on this subject in 1920. Plants differ greatly in their day-length requirements and, contrary to older ideas, not all plants grow best under a long day or continuous light. Some require a short working day and a long night; others require long days and short nights for their best development. Others can do quite well under either set of conditions and nearly all plants react positively to intermittent periods of light and darkness. Does that sound like hooey to waste money on?

It is very difficult to evaluate a piece of research properly until it has twenty-five years or so behind it. About all one can do soon after it is published (and the publication of this work ran over a number of years) is to cite its potentialities. This discovery of photoperiodism is almost certainly the most fundamental research discovery Bureau of Plant Industry scientists have made in recent years, and the results that may be expected to flow from it are striking indeed.

(Continued on page 504)

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Where increased protein intake is indicated, many physicians prescribe Knox Gelatine as a drink to supply concentrated pure protein in an easily digestible form. It provides special dietary supplementation in preoperative and postoperative cases, for convalescents and to assist metabolism of patients suffering from non-specific asthenia and fatigue.

Plain, unflavored Knox Gelatine is not to be confused with ready-flavored gelatine dessert powders. It is all protein and contains no sugar. Knox Gelatine contains 7 of the 10 amino acids considered dietary essentials. In view of current shortages of meat, the high concentration of pure protein in Knox Gelatine assumes augmented significance. A pamphlet on the protein value of this gelatine is available free to the profession through use of the coupon below.

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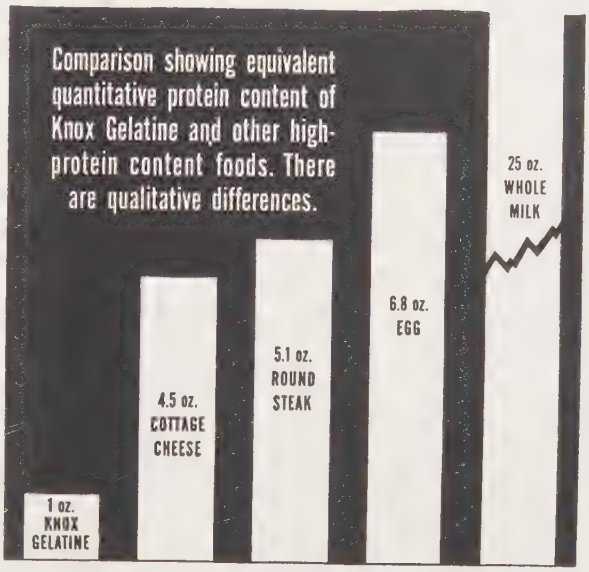
Your hospital will procure Knox Gelatine for your patients if you specify it by name.


Comparison showing equivalent quantitative protein content of Knox Gelatine and other high-protein content foods. There are qualitative differences.
1 oz. KNOX GELATINE
4.5 oz. COTTAGE CHEESE
5.1 oz. ROUND STEAK
6.8 oz. EGG
25 oz. WHOLE MILK

AMINO ACID COMPOSITION OF GELATINE

Alanine	8.7
*Arginine	8.2
Aspartic Acid	3.4
Cystine	0.16
Glutamic Acid	5.8
Glycine	25.5
*Histidine	0.9
Hydroxyproline	14.4
*Isoleucine	0.0
*Leucine	7.1
*Lysine	5.9
*Methionine	0.97
*Phenylalanine	1.4
Proline	19.7
Serine	0.4
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Knox Gelatine, Johnstown, New York. Dept. 4[illegible]

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☐ Peptic Ulcer ☐ The Diabetic Diet

☐ Reducing Diets and Recipes ☐ Infant Feeding

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For instance, it already enables plant scientists to make controlled trials of a plant in a greenhouse anywhere, and thus to determine in what part of our large country it would thrive best. The light and other environmental conditions of the plant as it grows in any latitude or altitude can easily be approximated artificially by means of this discovery. It is also possible, from certain growth habits a plant shows, to decide whether it would thrive better or not with a day of different length; a day of proper length can accurately be prescribed for its optimum growth.

A newly discovered Maryland variety of tobacco would grow vigorously and produce excellent yields but would not flower in that latitude. To get seed the plant had to be grown in Florida before this discovery. After it was made, however, the plant could be grown in the greenhouse under proper light conditions during the winter months and would then flower readily and set seed in Maryland. In fact, the scientists now have absolute control over the flowering and fruiting season of various plants.

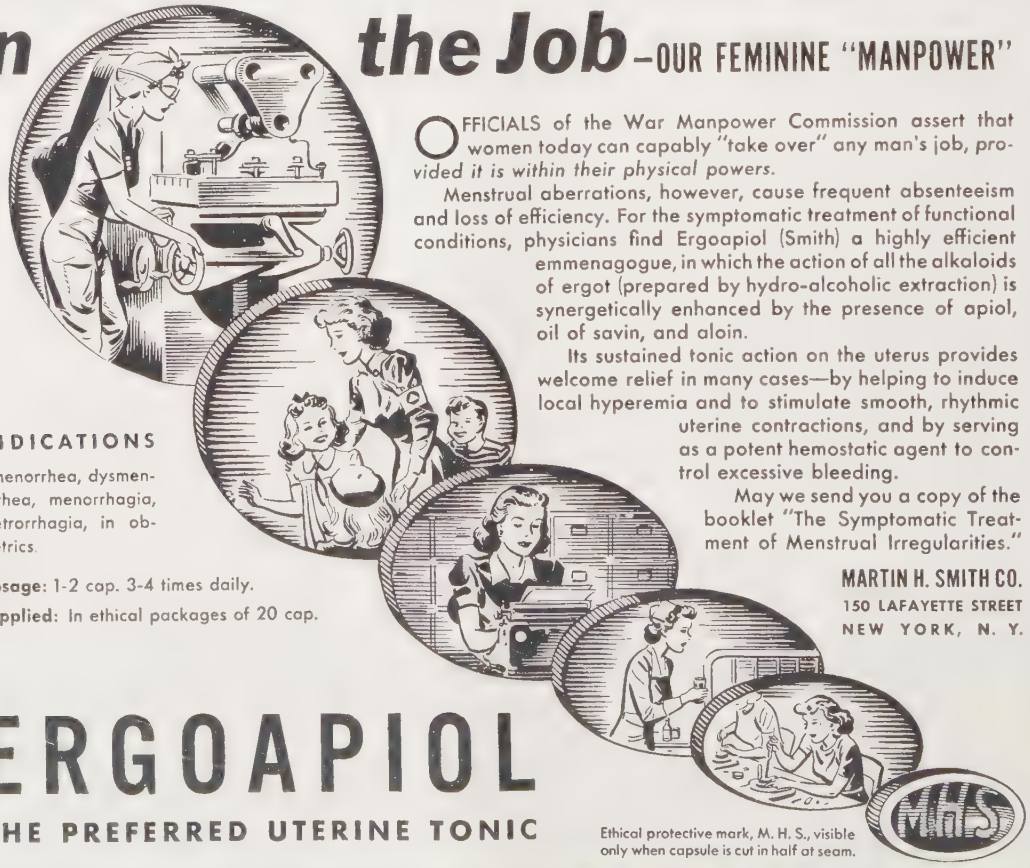
Here are two plants he wants to hybridize but he cannot cross them because they flower naturally at very different times of the year. However, by using the discovery of Gardner and Allard, he is easily able so to control flowering and fruiting that he can get the two varieties to bloom simultaneously and can cross them. Today he can retard or accelerate fruiting and flowering at will. He can also put a plant like the sugar beet through its generations much more rapidly than normal, a process that saves a great deal of time in breeding varieties resistant to disease. This is a major contribution to methodology in plant research that is bound ultimately to have the most important economic consequences.

So science is a great mosaic or, to modernize the idea, a jig-saw puzzle. It has a design—a tremendous, large-scale design. It has a basic method. So long as research workers faithfully follow that method their tiny contributions all fit into the mosaic-puzzle and, when the design is filled out at that point, they come into their period of maximum utility. As in fitting together a jig-saw puzzle one thing leads to another. The process may appear chaotic and irrational to those who see it without understanding. But every worker contributes his mite to the making of the ultimate grand design and it is unwise that we discard the least of these.

Ambroise Paré

The talents of the famous French surgeon Ambroise Paré (1510-1590) were recognized early in his career, and he had the distinction of becoming the private surgeon to four successive French kings. He was very modest, and frequently repeated the saying, "I dressed him; God cured him." In the early part of his career Paré tells of an incident in which after a battle he was going about, in company with an old soldier, caring for the wounded. They entered a barn and found three hopelessly wounded soldiers. His companion asked the young surgeon if anything could be done for these men and when told that each case was hopeless, Paré says the veteran took his sword and cut the neck of each soldier "gently and without ill toward them". To Paré's remonstrances, the soldier replied that he prayed God that in similar circumstances some one would do the same for him.

On the Job—OUR FEMININE "MANPOWER"



OFFICIALS of the War Manpower Commission assert that women today can capably "take over" any man's job, *provided it is within their physical powers.*

Menstrual aberrations, however, cause frequent absenteeism and loss of efficiency. For the symptomatic treatment of functional conditions, physicians find Ergoapiol (Smith) a highly efficient emmenagogue, in which the action of all the alkaloids of ergot (prepared by hydro-alcoholic extraction) is synergetically enhanced by the presence of apiol, oil of savin, and aloin.

Its sustained tonic action on the uterus provides welcome relief in many cases—by helping to induce local hyperemia and to stimulate smooth, rhythmic uterine contractions, and by serving as a potent hemostatic agent to control excessive bleeding.

May we send you a copy of the booklet "The Symptomatic Treatment of Menstrual Irregularities."

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INDICATIONS

Amenorrhea, dysmenorrhea, menorrhagia, metrorrhagia, in obstetrics.

Dosage: 1-2 cap. 3-4 times daily.

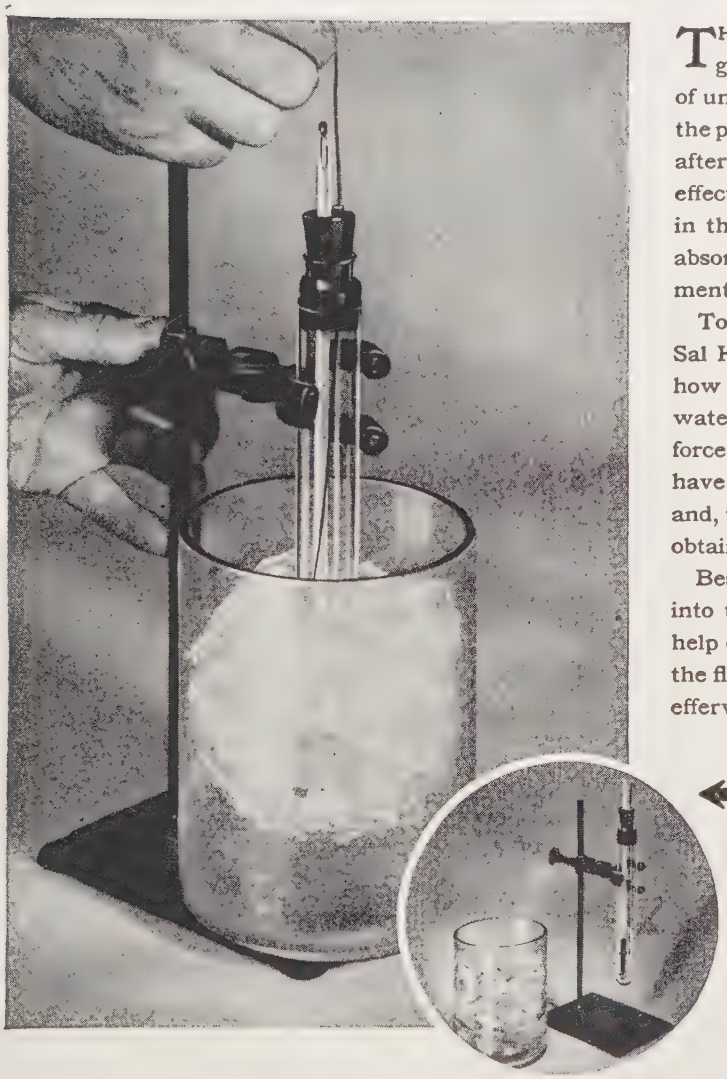
Supplied: In ethical packages of 20 cap.

ERGOAPIOL

THE PREFERRED UTERINE TONIC

Ethical protective mark, M. H. S., visible only when capsule is cut in half at seam.

FREEZING POINT INDICATES OSMOTIC POWER OF SAL HEPATICA TO PRODUCE LIQUID BULK IN BOWEL



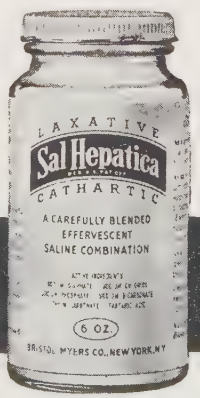
THE LIQUID BULK of Sal Hepatica acts gently and reliably to rid the costive bowel of unwanted waste. The bowel is flushed and the peristaltic musculature stimulated shortly after administration of Sal Hepatica. The effective laxative action of Sal Hepatica lies in the osmotic power of the temporarily unabsorbable *liquid bulk* it brings into the alimentary tract.

To learn accurately the osmotic power of Sal Hepatica, tests were made to determine how much it reduced the freezing point of water—a truly scientific index of osmotic force. Sal Hepatica was definitely found to have a considerably lower freezing point and, therefore, higher osmotic pressure than obtained in normal fluids and cells of man.

Besides their ability to draw *liquid bulk* into the bowel, the salines of Sal Hepatica help offset gastric hyperacidity and promote the flow of bile. Sal Hepatica makes a zestful, effervescent aperient. Literature on request.

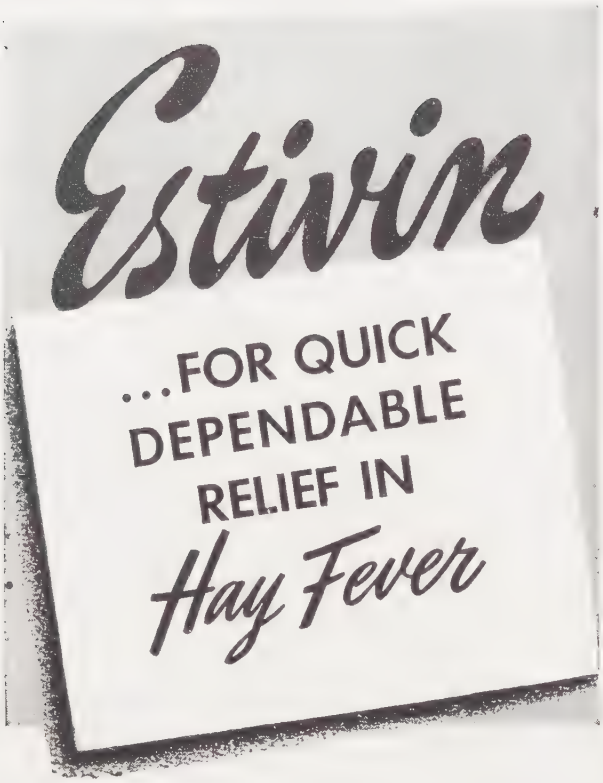
Sal Hepatica solution is placed in glass tube so that it covers mercury in Centigrade thermometer. The tube is then immersed in a container of ice. Sal Hepatica solution showed low freezing point denoting high osmotic pressure which produces liquid bulk in alimentary tract.

SAL HEPATICA



SUPPLIES LIQUID BULK TO FLUSH THE INTESTINAL TRACT

Bristol-Myers Company, 19-JJ West 50th St., New York, N. Y.



Blurred vision and lacrimation caused by pollen irritation, as well as the incessant attacks of sneezing, interfere greatly with the working capacity and recreation of the hay fever patient. Cumulative experience has shown that rapid and complete relief is obtainable during the entire season by the use of Estivin.

One drop in each eye 2 or 3 times daily is generally sufficient to keep the average patient comfortable during the entire hay fever season. In the more severe cases, additional applications whenever the symptoms recur will assure relief throughout the day.

Literature and sample on request

Schieffelin

Schieffelin & Co.

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Pharmaceutical and Research Laboratories

Van Patten's Policy in Regard to Sale of Vitamins

Believing that only a qualified physician is competent to determine whether there is need for vitamin supplementation, the Van Patten Pharmaceutical Company takes issue with what they call "cracker-box therapy". In a recent advertisement, which has received much favorable comment, they state: "The chief objection to cracker-box prescribing isn't fear of what the vitamins might do to the 'patient' but what the wrong diagnosis might do." The makers of B-Natural Vitamin B Complex tablets do not believe that the proper outlet for vitamins is the grocery or variety store. They do not believe that vitamins are indicated for all man's ailments, any more than were the curealls of a bygone age. They believe that vitamins should be prescribed only by physicians and sold only by registered pharmacists. In line with this policy B-Natural is advertised only to physicians and sold only through qualified druggists.

Schering Corporation Moves Executive Offices to New Quarters

In an expansion move dictated by the greatly augmented demand for its pharmaceutical and hormone products by Government and Lend-Lease agencies, as well as by civilian physicians and hospitals, Schering Corporation has transferred its general and administrative offices from their former location in its Bloomfield factory, 86 Orange Street, to the Bloomfield Bank and Trust Company building, at 2 Broad Street, Bloomfield, N.J. The entire sixth and seventh floors in this office building will be occupied by the corporation executives and the personnel of the medical research, professional service, accounting, domestic and foreign sales, advertising and general office staffs. Approximately one hundred and twenty-five persons are being established in these new quarters.

In reviewing the factors which necessitated this change in location, William J. Hagenah, chairman of the board of directors, explained that by moving the executive offices at this time additional factory space will be made available for the needs of the production department which is now operating at full force. Schering Corporation also has laboratories and a factory in Union, N.J.

Quinacrine Under Allocation

Quinacrine, a synthetic chemical having antimalarial properties similar to those of quinine, was placed under allocation on April 2d by the War Production Board through issuance of General Preference Order M-306. Quinacrine is also produced under the trade name of "atabrine". A producer seeking authorization to deliver or use quinacrine in any month, beginning with May 1943, must file application with the War Production Board on Form PD-602 by the twentieth of the preceding month. In addition, each producer is required to file by the fifth of each month, beginning with May, a list of civilian customers to whom he made deliveries in the preceding month. A producer is defined in the order as a person who produces or imports quinacrine or has it prepared for him or who makes quinacrine tablets or other dosage forms of quinacrine except ampoules.

PRIODAX

TABLETS

for dependable cholecystograms

Accurate gallbladder diagnosis is now more certain with PRIODAX, a new contrast medium which owes its superiority to its form and composition.

Iodine, (51.5%) firmly bound, in a stable organic molecule produces reliable, clear pictures of uniform density by the "single-dose" method.

Contains no phenolphthalein or any related derivatives, thus reducing the possibility of diarrhea with loss of contrast material.

Tablet Administration and chemical nature favor retention. Vomiting ...so often associated with unpalatable powders...is *rare* with PRIODAX.

Administration: Six tablets swallowed whole in the course of a light fat-free evening meal. X-ray exposures are made in 12 and 15 hours.

PRIODAX, β-(4-hydroxy-3, 5-diiodophenyl)-α-phenyl-propionic acid, supplied in cellophane envelopes, each containing six tablets. Boxes of 1, 5 and 25 envelopes.

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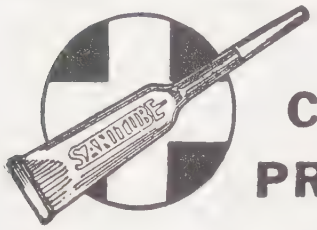

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Against Gonorrhea and Syphilis

Sanitubes, the original Navy prophylactic tubes, are not sold in Army post exchanges.

Every drug store a prophylactic station!

A single tube only—half the ointment inside the urethra to prevent gonorrhea, half applied outside to protect against syphilis.

No "two tubes" to get confused, no color to stain fingers and clothing, no odor, no irritation.

As to comparative efficiency, let us send you laboratory findings.

THE SANITUBE CO., NEWPORT, R. I.

Calamine in Cream Form

With the season for sunburn, insect bites, and ivy-poisoning at its height, doctors find a calamine preparation indicated in many cases. But the commonly used calamine *lotions* have many disadvantages. For one thing, these affections are usually among the younger, more active people. Also, this is the time of year when everyone is either on vacation or wants to be out-of-doors and moving around; lotions are inconvenient for these people to use.

On the other hand, calamine in nongreasy *cream form* is so handy to carry and use that it is coming to be the treatment of choice of more and more physicians. An ointment, moreover, can be compounded to embody adjuvants. Thus Calamatum (Nason's) contains not only calamine, but also zinc oxide and camphophenol. It has many advantages over calamine lotion. Thus, since an ointment is handy to carry in handbag or picnic basket, the patient can take it with him, and use it when it will yield maximum benefits. The simplicity and certainty of making an effective application is also important. Since Calamatum dries out quickly and will not rub off, it requires no bandaging to protect clothing—and at the same time it stays on the skin, exercising its full medicinal effect at the point of lesion. Finally, the camphor and phenol content of Calamatum reduces itching and general discomfort. This is a final, clinching argument for making applications at the time and in exactly the manner the physician has instructed—instead of only sporadically as may be the case when a lotion is prescribed.

In Whooping Cough

ELIXIR BROMAURATE

Cuts short the period of the illness, relieves the distressing, spasmodic cough and gives the child rest and sleep.

Also valuable in other PERSISTENT COUGHS and in BRONCHITIS and BRONCHIAL ASTHMA.

In four-ounce original bottles. A teaspoonful every 3 to 4 hours.

REFERENCES: Clinical Observations on The Treatment of Pertussis with Gold Tribromide (Elixir Bromaurate). Medical Clinics of North America, Sept., 1938.

Gold Tribromide (Elixir Bromaurate) in the Treatment of Pertussis. Report of 450 Cases. Medical Record, August, 1939.

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Medical Officers Needed for Federal Civilian War Service

The critical shortage of physicians to engage in vital war work in the civilian branches of the Government has resulted in a liberalized civil service examination for medical officers. The twenty optional branches under which doctors may apply range from general practice to aviation medicine. Those appointed will perform professional duties as doctors of medicine in active practice, in hospitals, in dispensaries, in the field or in rural areas; or in bureaus of the Government such as the Veterans Administration, Civil Aeronautics Administration, Public Health Service, and Food and Drug Administration. Doctors will also be used in industrial establishments under direction of the War Department.

Applicants for all grades must have received the degree of M.D. from an accredited medical school. There are no written tests and no age limits. Persons now using their highest skills in war work should not apply for these positions. Persons rated eligible on the Medical Officer examination of 1941 need not file applications again unless they consider that they now possess qualifications for a higher grade or different option.

Further information and application forms may be obtained at first and second-class post offices, Civil Service Regional Offices, and from the Commission in Washington, D.C.

Progesterone in Oil

For the treatment of certain cases of habitual or threatened abortion, dysmenorrhea and functional bleeding, E. R. Squibb & Sons, New York, have added Progesterone in Oil to their extensive line of hormone products. This is a sterile preparation of pure crystalline progesterone in corn oil for intramuscular administration, standardized in terms of international units. One international unit is the progestational activity of one mg. of the crystalline standard.

Progesterone in Oil Squibb is supplied in ampuls containing sufficient material for the withdrawal and administration of 1 cc. It is available in the following sizes: 1-cc. ampuls containing one mg. (one international unit) Progesterone, in boxes of three, twelve and twenty-five ampuls, and 1-cc. ampuls containing two mg. (two international units) Progesterone, in boxes of three, twelve and twenty-five ampuls; 1-cc. ampuls containing five mg. (five international units) Progesterone, in boxes of three and twelve ampuls.

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(iodine 0.62%)
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(better tolerated--less heart-stimulating effects)
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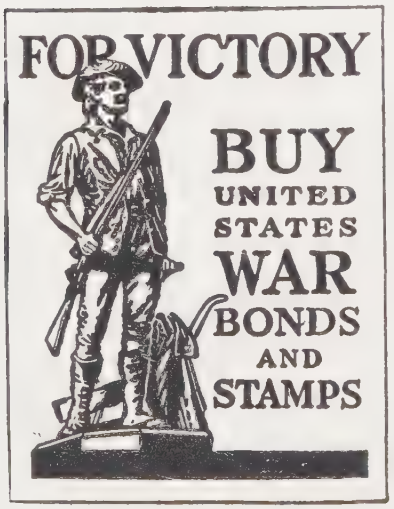

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Typhoid Carriers

A total of 437 typhoid carriers, exclusive of those in state institutions, were under supervision in upstate New York at the close of 1942, according to *Health News*. Thirty new carriers were added to, and twenty-five were removed from the register during the year. Twenty-two were discovered as a result of epidemiological investigation of sporadic cases of typhoid, seven by means of release cultures, and one was discovered accidentally while hospitalized with a diagnosis of bronchopleural fistula.

Of the twenty-five carriers whose names were removed from the register, eighteen died. One was released from restrictions after the submission of the required number of negative fecal and duodenal specimens following cholecystectomy, while the names of six others were removed because of change of residence of the carrier to a community outside the jurisdiction of the department.

The Asthmatic Personality

C. H. Rogerson (*British Medical Journal*, April 3, 1943) in discussing the psychological factors in asthma says that in his experience the asthmatic child tends to be of a special personality type with the following characteristics: He has an intelligence much above the average; he is irritable and aggressive, and quick to respond; he is overanxious, insecure, and lacking in selfconfidence.

As a result of his insecurity he often at first sight appears repressed and submissive, but even then there is generally an air of subdued tension about him, and, given an opportunity for freer and more confident self-expression, he becomes aggressive and domineering. He is, in fact, the type of child who makes more demands upon his parents, particularly his mother, than almost any other. He is an intelligent individual who twists her round his finger, aggressive enough to get his own way and anxious enough to demand her continual attention. The author said that he had often seen children who subsequently developed asthma showing in their earlier years all these characteristics and developing with their distracted parents a relation exactly like that seen in the case of the full-blown asthmatic. To fulfil their own personality needs they both dominate and demand protection from their parents. The fulfilment of these exaggerated needs, however, leads them, as we all know, ultimately into a state of frustration which they cannot either tolerate or get away from; thus the typical relationship development—aided, of course, in many cases by maternal overanxiety.

Passenger Discomfort on Airplanes

Colonel A. D. Tuttle, director of the medical department of the United Air Lines, has made a survey of the causes of discomfort among passengers carried by the company during the years 1938 through 1942. This survey shows that the airsickness rate has steadily declined from 3.3 per one thousand passengers in 1938 to one per thousand in 1942.

His findings are as follows: Only one person in one thousand suffers from the effects of altitude and has to take oxygen, which is provided on all planes; only one in one thousand eight hundred has ear trouble; only one in two thousand five hundred suffers from nervous unrest; and only one in one thousand indicates other miscellaneous discomforts.

Increase in Tuberculosis Mortality

The large movements of population because of the expansion of defense industries, the inadequacy of housing facilities in many parts of the country, and the accelerated work tempo demanded in many industries lead health officials in this country to expect an increase in the mortality of tuberculosis such as has been experienced in Great Britain. Last year there was a slight rise in tuberculosis mortality in New York City but in 1942 this increase appears to have halted. The number of deaths due to tuberculosis, however, is still so large that control measures should in no way be abated. —*Bull. New York City Department of Health*, February, 1943.

BURNHAM SOLUBLE IODINE
Well-tolerated, active iodine. As alterative prescribe 15-25 drops t.i.d., well diluted, 15 minutes before meals.
A sample will convince you
Burnham Soluble Iodine Co., Auburndale, Boston, Mass.

National Drug Announces New Allantomide with Sulfathiazole

The National Drug Co., of Philadelphia, manufacturer of pharmaceutical and biological preparations, announces the introduction of a new form of its well known Allantomide Ointment, to be known as Allantomide with Sulfathiazole. The formula of the new product is five percent sulfanilamide, five percent sulfathiazole, and two percent allantoin, in the specially developed, greaseless Allantomide base.

Allantomide with Sulfathiazole "National" was developed by the company's research laboratories in response to a demand by physicians for an agent which would provide more specific control over certain surgical and dermatological conditions involving staphylococci. The regular Allantomide with its ten percent sulfanilamide and two percent allantoin has established an enviable record in controlling infections and stimulating healing in a variety of conditions, particularly wounds, burns, and external ulcers. However, it is well known that sulfathiazole exerts a more specific, prolonged bacteriostatic action on staphylococci, while the more soluble, quicker-acting sulfanilamide provides a similar specificity toward streptococci. Clinical studies show that the new Allantomide with Sulfathiazole is effective in such conditions as impetigo, furunculosis, osteomyelitis, carbuncles, infected eczema, and similar infections. It is available in 1 oz. tubes, 4 oz., 1 and 5 lb. jars.

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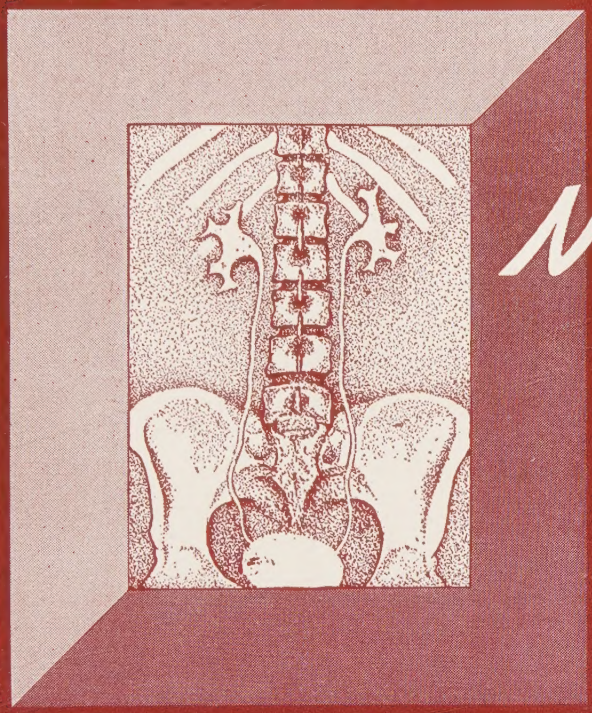

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